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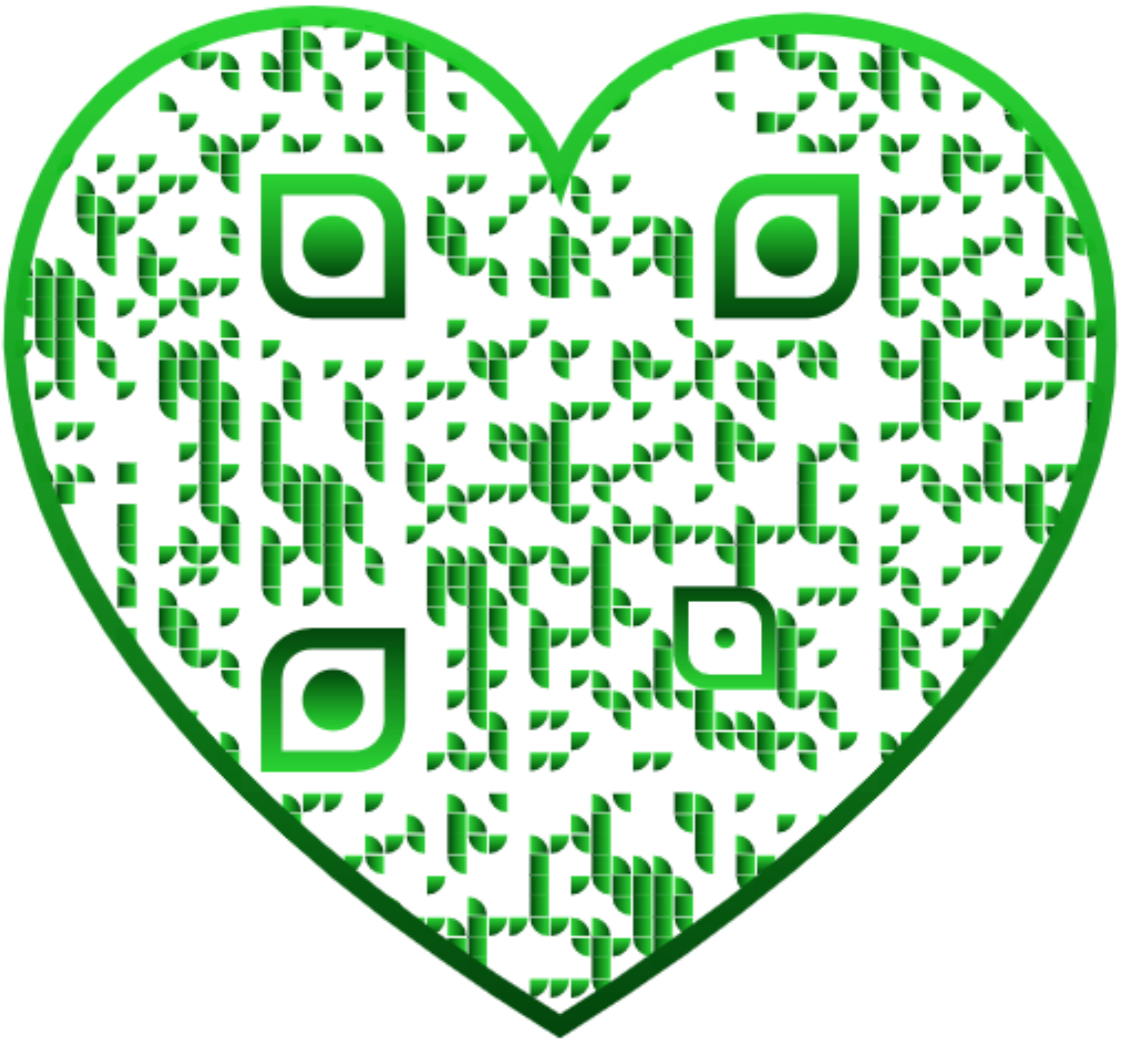

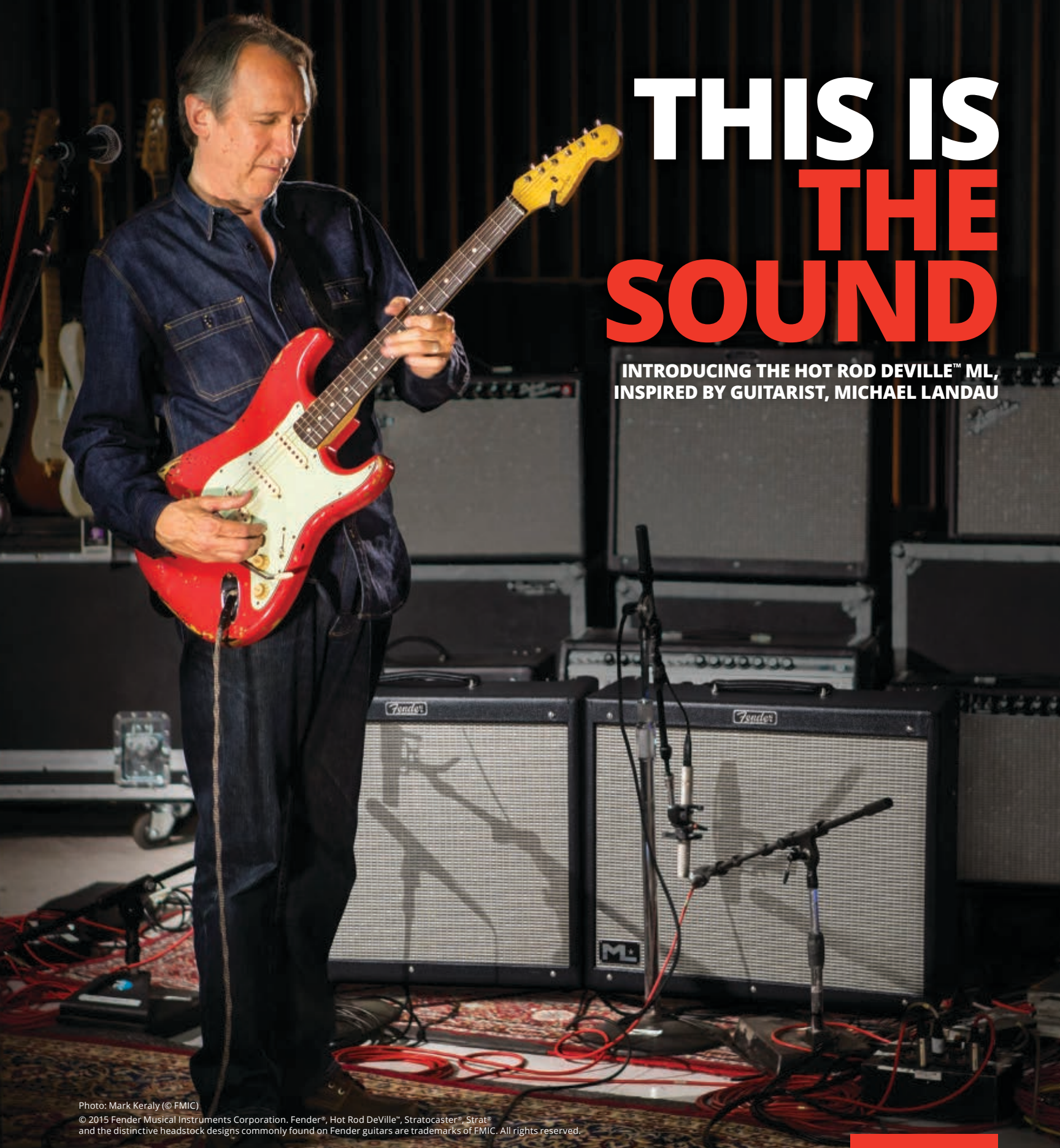

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CAPITOL STUDIOS — APRIL 15, 2014
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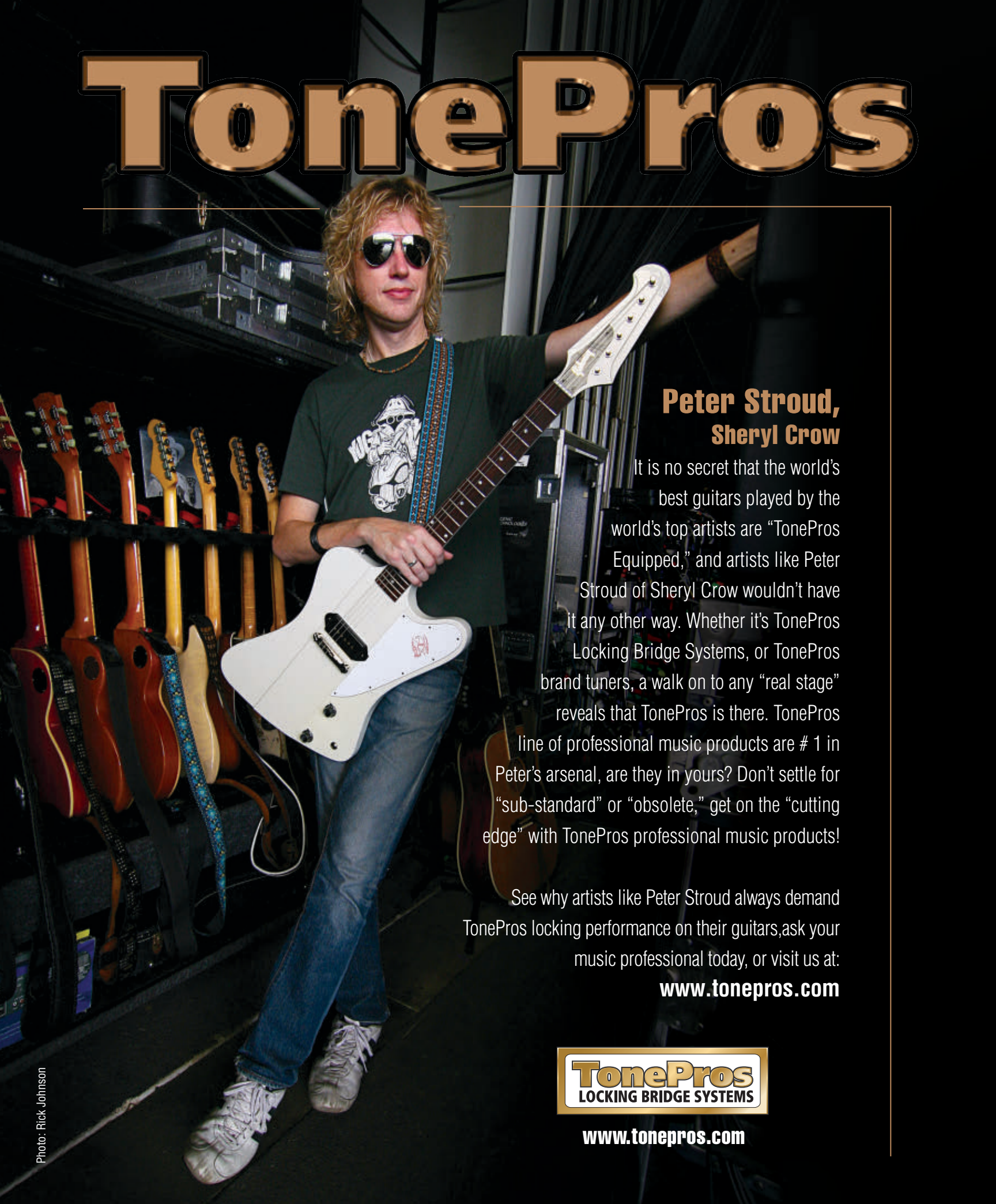
TonePros



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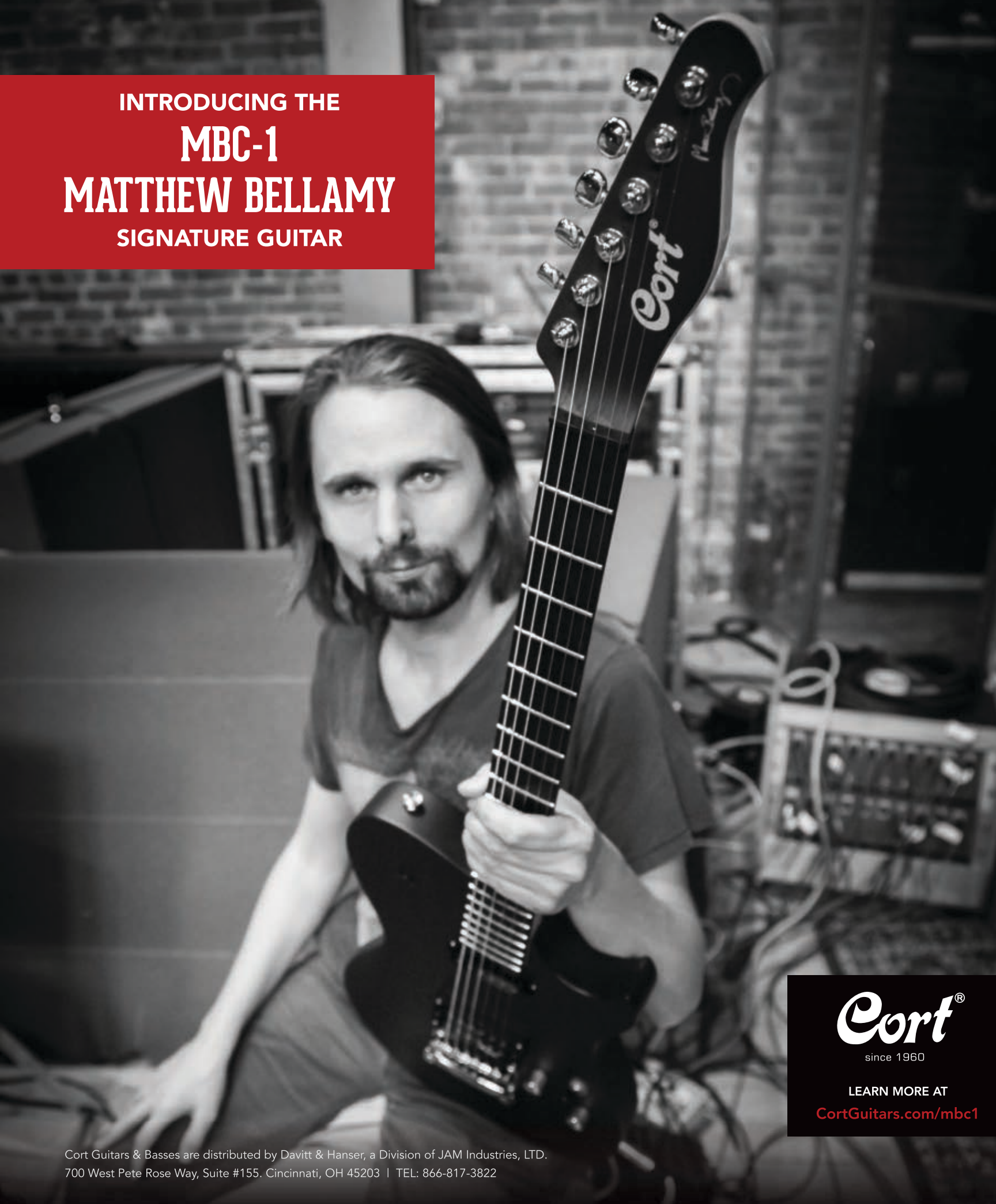
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Shatner, Cat Parasites, and the Quest for Mastery

BY SHAWN HAMMOND

@PG_shawnh

I don't know if it's boredom, demonic possession, or maybe one of those Toxoplasma gondii brain parasites that makes rats try to hang with cats instead of run away from them (they say 3 billion of us humans have it, too), but the more time goes on, the more I veer toward stuff that's bad for me. Or stuff I used to *think* was bad for me. I'm not talking about juggling chainsaws or parasailing in tornados—I'm talking ideas.

I got pretty good grades as a kid, but I wasn't super into biology, chemistry, or any other science-y subject. My strobe-light project in electronics class barely worked, and my stupid distortion pedal kit was D.O.A. And I *loathed* math. I pretty much only liked history and English. The rest of the time I pretty much prioritized daydreams about guitar crap, ladies, and skateboarding, not necessarily in that order.

But now I'm totally into that nerdy stuff: Tim Urban's recent "The AI Revolution: The Road to Superintelligence" blog posts blew my mind. *Scientific American*'s article on that parasitic toxoplasmosis junk has me envisioning an animated miniature William Shatner jumping from my fat-ass cat Viktor to me and controlling my body from his office in my brain, just like he did to Bill Murray in *Osmosis Jones*. And another recent brainiac piece has me wondering whether a theorized disk of dark matter in the middle of the Milky Way is about to reach out and wreak havoc on Earth with another of its pesky 30-million-year bouts of fiery comets and rampant volcano madness.

I'd rather read this stuff than some biography about Elvis, the Beatles, Zeppelin, or almost any other musician. I dig their tunes and respect them, but I don't need the minutiae. Sure, there are rare exceptions. I once read a book about Radiohead (spoiler alert: they almost break up every time they go in the studio). And every day on the job at *PG* gives me a pretty good fill of cool music and guitar knowledge. But unless that little Shatner protozoan is yanking my chain, I think this nerd bent I'm on is just better exercise for my mind.

I'm still no good at the subjects themselves. Maybe I just like reading this stuff because it flushes out my brain. Or maybe it's because there's always unexpectedly cool angles that can relate back to my music obsession. Just one example: I found inspiration for my life outlook *and* my playing 10 pages into the *Dancing Wu Li Masters,* a book on quantum physics given to me by my pal Andy Ellis—a mentor and hero of mine since long before he was senior editor here at *PG*.

In it, author Gary Zukav describes a conversation with Chungliang Al Huang, the philosopher and tai chi master who inspired the *Dancing Wu Li Masters* name. Asked how he structured his tai chi classes, Huang said, "Every lesson is the first lesson. Every time we dance, we do it for the first time."

Zukav balked. Certainly Huang had to build on the foundations of previous lessons.

"When I say that every lesson is the first lesson," Huang replied, "it does not mean that we forget what we already know. It means that what we are doing is always new, because we are always doing it for the first time."

Zukav pegged this holistic approach as a trait of a true master. To me, there's something in that idea for all of us, no matter what we're into. But the quest for mastery as Huang sees it is the reverse of conventional wisdom—it's not about slavish repetition and physical mastery, it's about the wonder of being in the moment, every moment. That's something I can put my dancing shoes on for.

Shawn Hammond
Chief Content Officer
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Photo Credit: Dara Munnis
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FEEDBACK LOOP

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The Gifted Guthrie Govan

While *Erotic Cakes* is a masterpiece, I find it refreshing that Guthrie, unlike other equally gifted guitarists, wants to make music where he connects with as many people as possible rather than falling into that "Olympic feat" guitarist niche as he so precisely puts it ["Steven Wilson and Guthrie Govan: To Shred or Not to Shred?," premierguitar.com]. I like him as a player who sees a role in the music he's playing and fills it, rather than dominating it completely.

—Nikolaj Hansen,
via premierguitar.com

Tune In

Pete [Thorn] always has good stuff ["Tone Tips: Maximizing Tuning Stability," April 2015]. I wish I had this when I was coming up 45 years ago. This is what I did (pretty similar line of thought): I put Sperzel locking tuners on my 25-year-old SG Standard a decade ago and started using Big Bends Nut Sauce. (A little dab will do ya.) I run the string straight through the tuners, pull tension, lock up, tension up, stretch, and tune. Don't wrap around the string post. Finally no more wonky G string on a Gibson. I check the intonation every string change. The new generation of strings is pretty exciting. Picks and strings can greatly affect your playing and are a hell of a lot cheaper than a new guitar. It may be just the spark weekend warriors needs to get their juices flowing again.

—Wilvus Maximus,
via premierguitar.com

I've found the No. 1 tuning issue is improper nut cutting ["Tone Tips: Maximizing Tuning Stability," April 2015]. Not only will an improperly cut nut make it harder and slower to tune, but the guitar will change its tuning as you play. Lube will only help slightly. It costs next to nothing to have the nut tweaked. Also, cheap guitars usually use plastic nuts, which, due to their softness, tend to "grab" a wound string. Since the major differences in tone come from your own technique, worry less about nut tone and more about tuning stability.

—"Magic Frank" Malitz,
via premierguitar.com

Intellectual Property

Interesting article ["Recording Guitarist: Outlaw Recording Sessions," April 2015]. I recently found lots of recordings of mine on YouTube, from back in '82-83, when I recorded with the Rolling Stones at Pathé Marconi Studios, Paris. Some tracks I play guitar, others bass.

The funny thing is, I doubt whether I would've ever gotten to hear them if it wasn't for the French engineer who secretly recorded them and made them available—one way of putting it! I've played on some 200 albums, but rarely get to hear any of the outtakes or get copies of them, especially doing sessions. So in an odd way, I find it good that I have a record of these events in my career that would otherwise be lost to me forever. Although it is also annoying when I hear things I've recorded that are regurgitated onto other songs that I never intended.

—Jim Barber,
via premierguitar.com

Shout-Out from South Africa

I would just like to give *PG* a big, huge THANK YOU for sending me all these exciting e-mail issues. The amount of fun reading, video viewing, instructional media, and much more is such a treat for me down here in South Africa. *PG* is, of course, my absolute favorite music magazine. Kind regards and please keep up the fantastic work you do.

—Liam de Mérovée,
via premierguitar.com

More Riffs, Please!

Excellent lesson, John ["What Bohlinger Plays: Cascading G Riff," premierguitar.com]. I really dig that you left the messing up part in there. Just keep 'em coming. Still waiting for more slide 101 in standard tuning. o.

—Richard Örnemark,
via premierguitar.com

Keep those comments coming!

Please send your suggestions, gripes, comments, and good words directly to **info@premierguitar.com**.

Socialize with Us!

@premierguitar: [Randy Rhoads] was laid to rest about a mile from my home and I remember it well. Sad day indeed, but his spirit lives on in his music.

—@robdog1264

@premierguitar: Randy Rhoads tragically passed away on this day in 1982. Sadly missed superb guitarist!!!

—@barneyhead

@Whos_With_Me @premierguitar: a pedalboard can be made out of anything. I used a flat-screen base to build mine.

—@KillerBend

Any time anyone posts something about a guitar that dares to be something more than yet another warmed-over Strat or single-cut clone, the luddites come out. For goodness' sake, where's your imagination? Really, is "fugly" the best you can offer as constructive criticism?

—David Eastwood

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"Even during our so-called Information Age, we are losing knowledge."

—John Bohlinger, Last Call, p. 176

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Above left: Photo by Lindsey Best; Bottom left: Photo by Blake Studdard/Atria Creative

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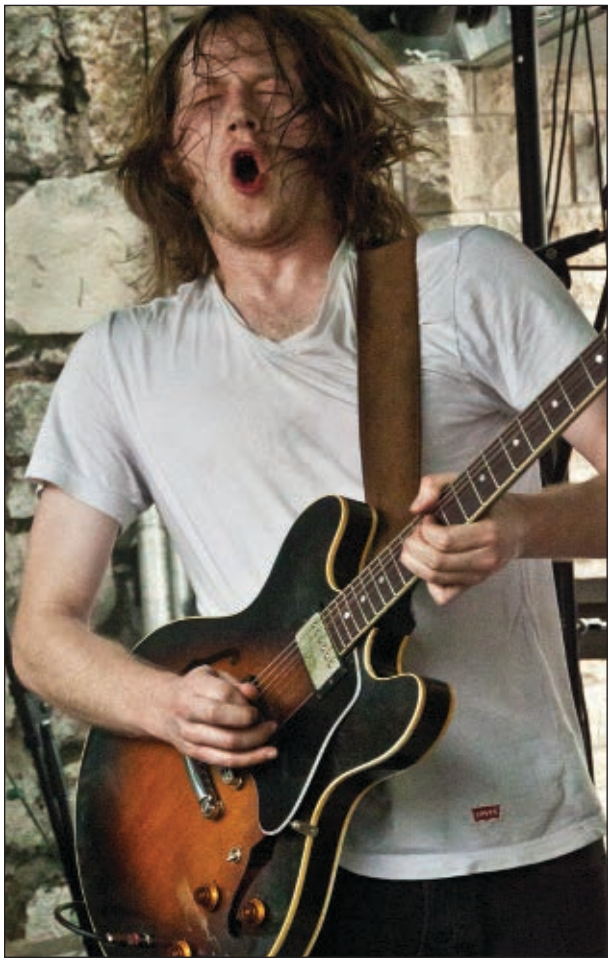

From the Texas Trenches

We had our ears to the ground at **South by Southwest 2015**, and are bringing you the lowdown on upcoming guitarists you should know about, including mini Rig Rundown-type interviews, live performance images, and a gear expo summary. Pictured above is a little teaser: **The Stone Foxes** guitarist **Ben Andrews** plays his 1979 Gibson ES-335—his first *real* guitar that he bought over 15 years ago—during a showcase. In other news, we talk to shoegaze pioneers **Adam Franklin** and **Jimmy Hartridge** of **Swervedriver** on the occasion of their just-released fifth album, *I Wasn't Born to Lose You*, which seems to fit right in with the sounds of today. Franklin tells us about his custom Dave Ayers "Telemaster," while Hartridge harps on the constraints of using a pedalboard to mount pedals.

Read these features and more at premierguitar.com/may2015

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By Levi Clay

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By Shawn Persinger

JAZZ TRICKS
How to Play Over "Giant Steps"
By By Corey Christiansen

ELECTRIC ETUDES
U2's The Edge
By Jamie Humphries

New Footage!

We're hearing great feedback on the new video lessons with *PG*'s Nashville correspondent **John Bohlinger**. He's given tips on playing slide licks in standard tuning, and he even shared his own little ditties that he calls "Van-Halen-ish hillbilly licks." This month he dissects a G-major lick that combines fretted notes with open strings to create a dynamic motif that can be transposed to multiple keys and used in virtually any genre. Watch it now: **premierguitar.com/BohlingerGRiff**. Let him know what you'd like to see in "**What Bohlinger Plays**" in the comments section, or send a note to info@premierguitar.com.

Above Left: Photo by Magnus Manske

GUITARDOM'S TOP TWEETS

"I'm ok with SNL just doing a 90 minute musical act. #AlabamaShakes"

—@MichelleDBeadle

"Wise words."

—@WalrusAudio

"The mathematics of a band. No love for bassists?"

—@toddowyoung

"U knew the blues scale was important. But did u know it can get u out of almost ANY harmonic jam? 12 guitarists explain how. #jazzBuzzFeed"

—@Joshua_Redman

"In 6th grade I opened a door for a guitar wielding G.E. Smith. That was the exact moment I began my unhealthy relationship w/ ponytails."

—@PrestonParty

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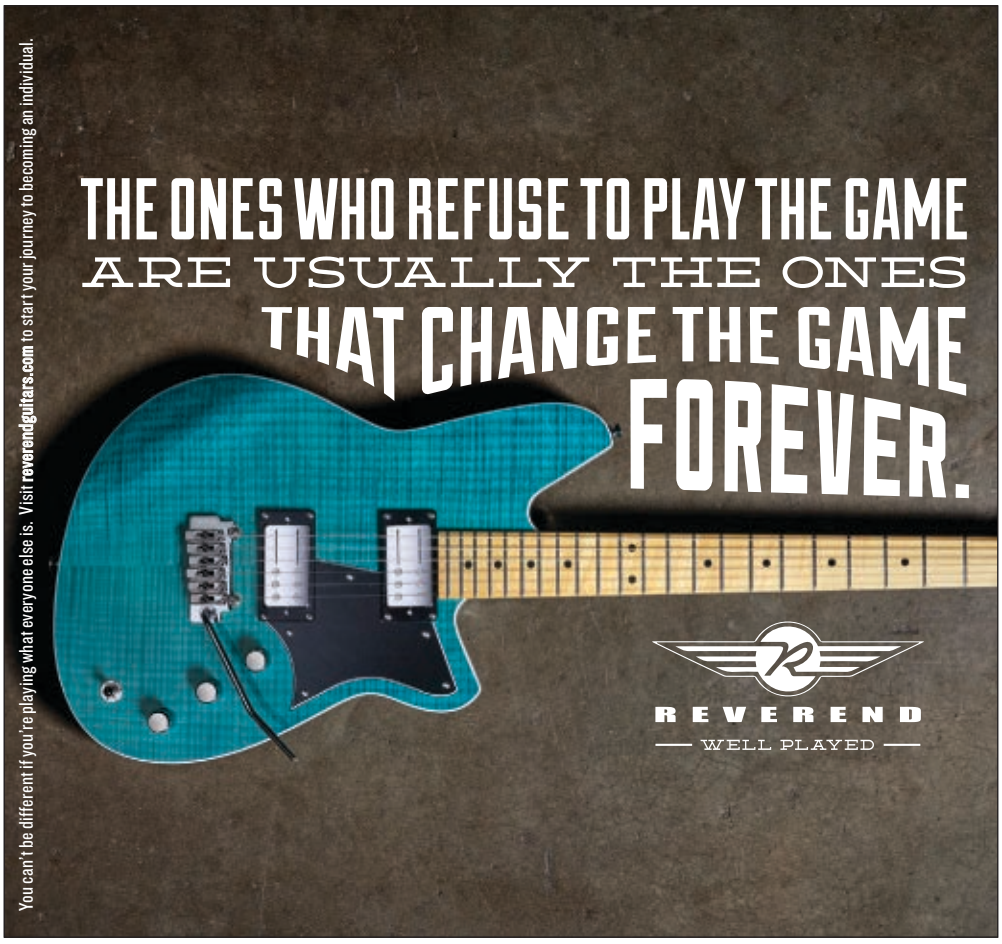

READER GUITAR OF THE MONTH

Name: Matthew Lieb
Location: Bath, Pennsylvania
Guitar: Custom Hot Rod

Our Reader Guitar of the Month was made by Matthew Lieb several years ago while he was taking a course at the Northampton Community College's Fab Lab. The guitar's LP-style body is maple, with a bloodwood and quilted-maple cap making up the flames. It has a one-piece maple neck with ebony fretboard, bloodwood dice inlays, and bloodwood headstock cap. For electronics, the guitar has the standard LP setup with two humbuckers, a 3-way switch, two volume knobs, and two tone knobs. Lieb added a rotary switch that allows him to select any one of six different tone caps.

The coolest part is that Lieb incorporated some DIY advice from *Premier Guitar* into his hot rod: "The switches in between the volumes and tones allow me to flip back and forth between standard tone control and the '50s LP wiring—a mod I got from Dirk Wacker's article in the January 2014 issue of *PG*." We love it. As Dirk always says … keep on modding!

OPENING NOTES

Gavin Rossdale

January 31, 2015
The Wiltern
Los Angeles, CA
Photo by Lindsey Best

The Bush frontman digs into one of two Fender Custom Shop Strats he co-designed with bandmate Chris Traynor. "I wanted a straightforward setup," Rossdale tells *PG*. To that end, it features a DiMarzio Air Zone bridge pickup and a lone volume knob.

OPENING NOTES

Wayne Krantz

February 11, 2015
City Winery
Nashville, TN
Photo by Andy Ellis

Jazz vet Wayne Krantz with his current go-to, a V60LP-loaded 2013 Suhr Classic Antique originally intended to be a loaner while he considered a custom build. "I didn't think I'd be into the relic option," Krantz tells *PG*, "but actually it makes the guitar slightly more playable, psychologically speaking. Go figure!"

OPENING NOTES

Zakk Wylde

February 22, 2015
Ancienne Belgique
Brussels, Belgium
Photo by Christophe Pauly

The Black Label Society axe-wielder brings the thunder with his No. 2 road guitar, a stock 2012 signature Gibson Les Paul Custom Vertigo. Wylde swears by the model's consistency and craftsmanship. "I could grab my Vertigo in any music store and do a show that night."

OPENING NOTES

Steve Stevens

February 7, 2015
Riviera Theatre
Chicago, IL
Photo by Barry Brecheisen

Billy Idol's lead guitarist gets busy with one of the two Knaggs Steve Stevens Signature IIs he currently tours with. The sparkly red SS2 is identical to the production models, except for the knobs Stevens procured on eBay, and the red TonePros bridge.

The Starfires

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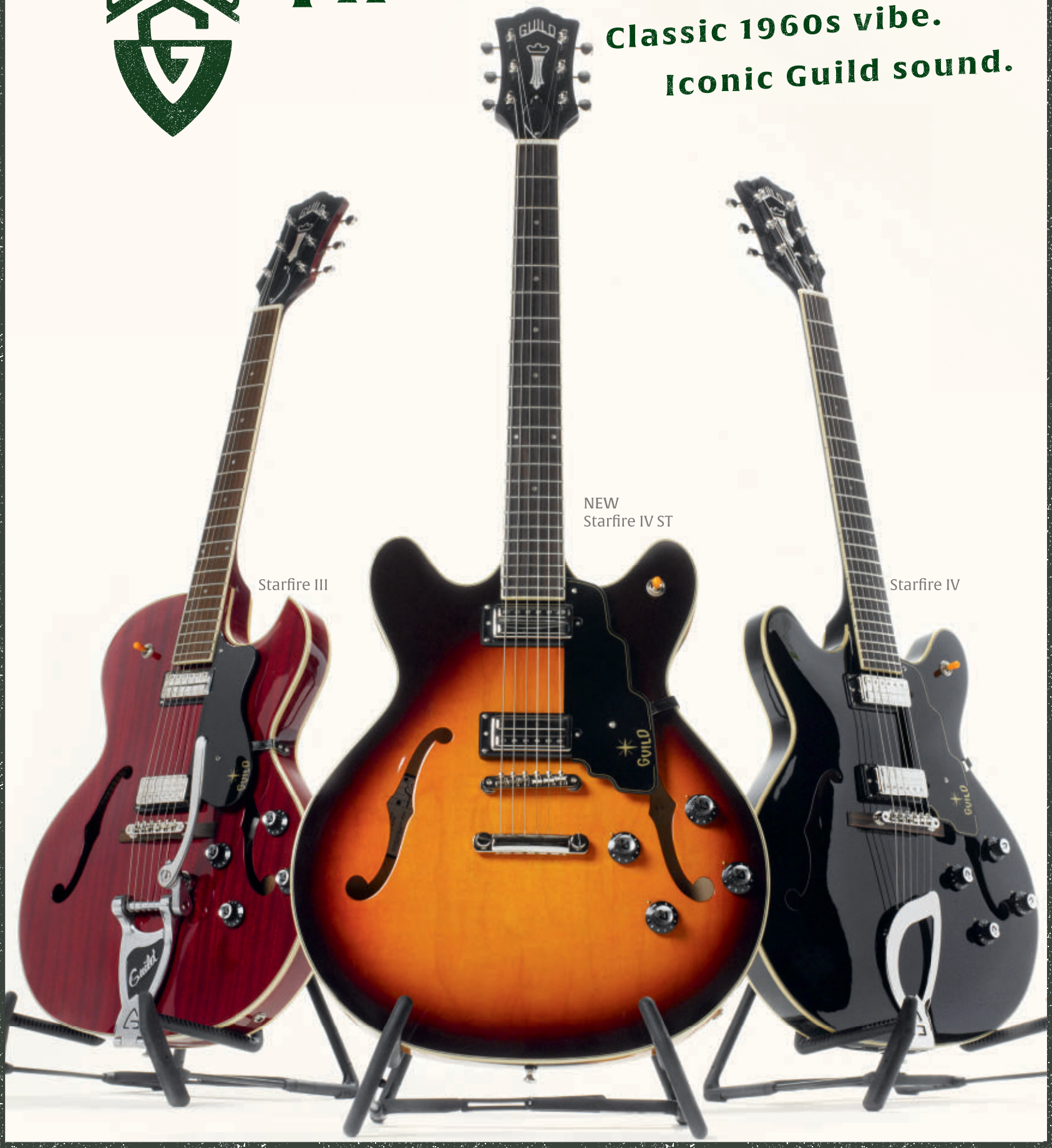
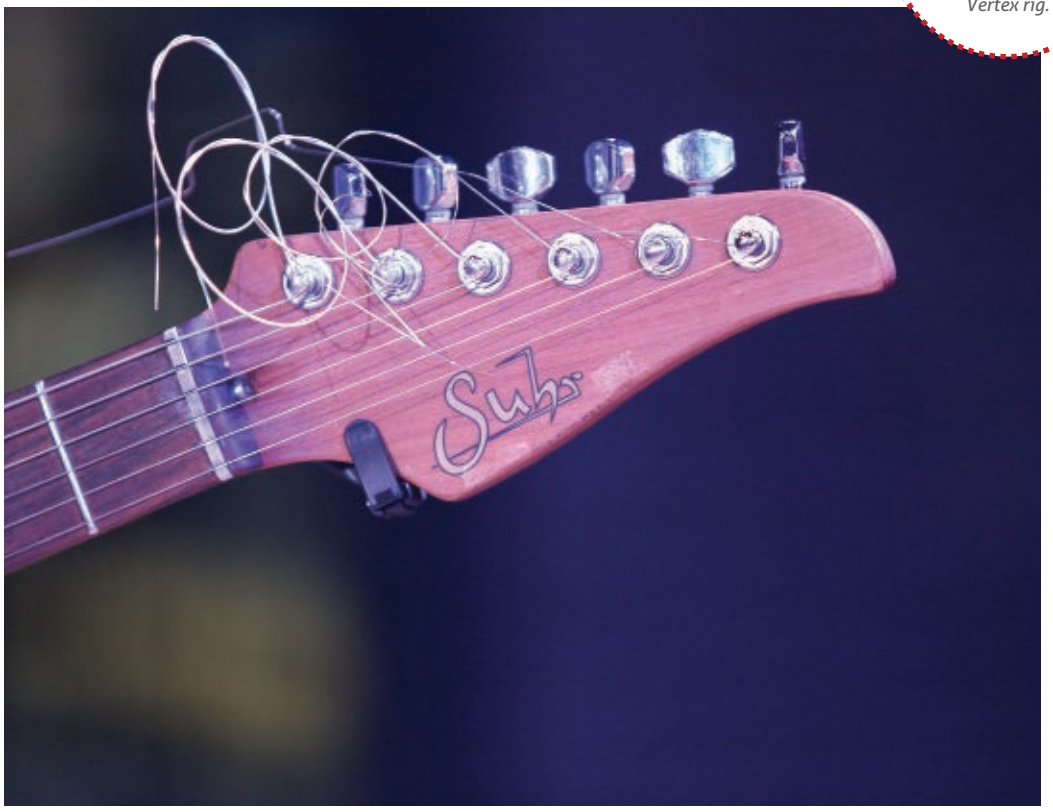


WAYNE KRANTZ

FACTOID
Krantz gave up on nice pedalboards after an airline destroyed his Vertex rig.

Premier Guitar *caught up with Wayne Krantz in Nashville at City Winery on the first date of his two-month tour to discuss his pragmatic approach to gear.*



GUITARS

Bottom: Wayne Krantz goes live without a net, touring with a single guitar, an S-style loaner from John Suhr. The Suhr has a very useable whammy bar, maple neck, and Suhr ML (Michael Landau) vintage-style single-coil pickups. Krantz opts for big-top/ skinny-bottom D'Addario strings (.011, .013, .017, .026, .032, .038).

AMPS

During his Nashville show Krantz plugged into a stock Fender Blues Deville 2x12 on loan from his driver. He ran out of the Fender into his personal amp, a Marshall 2553 Silver Jubilee with a matching 2x12 mini cabinet. Krantz picked up the Marshall on eBay years ago, and the two have had a warm working relationship ever since

EFFECTS

While not an obsessive gear nerd, Krantz does enjoy pedals. At one point he toured with a professionally built board, but the TSA ruined all that by repeatedly pulling it apart on flights. Now Krantz rocks it like a teenager in a garage band with all of his pedals living in a bag—he just pulls them out and arranges them on the floor. It makes changing pedals a snap and travel easier

Although Krantz often experiments with different pedals, he currently plugs into a Vertex Wah, Vertex Boost, Maxon SD-9 Sonic Distortion, Wren and Cuff Tall Font Russian, Boss OC-2, Electro-Harmonix Frequency Analyzer, Boss DD-3, Electro-Harmonix Freeze, and a Neunaber Technology Wet Reverb. A G-Lab PB-1 Power Box provides the juice.

Zach Blair

RISE AGAINST

FACTOID
Blair played Flattus Maximus in GWAR from 1999 to 2002.

Zach Blair is a PETA-supporting, straight-edge vegetarian who, when he's not on tour, does his best to help keep Austin weird. The humorous, mild-mannered hardcore vet recently took time during Rise Against's 2015 arena tour with Linkin Park to meet with Premier Guitar *and share in-depth details on his gear.*

GUITARS

Blair is a longtime Gibson Les Paul player who isn't afraid to mod his axes. He brings a trio of LPs on the road, and each one has some unique features. His main guitar is a black Classic Custom with an EverTune bridge and Seymour Duncan Distortion pickups. All of Blair's electrics are strung with Ernie Ball Cobalt Slinkys gauged .010–.052.

Top Left: A natural-finished Classic Custom pairs an EverTune bridge with Lace humbuckers.

Top RIght: And a black Les Paul Custom also loaded with Duncan Distortions rounds out the trio.

Right: For acoustic numbers, Blair reaches for a Gibson J-160. His favorite picks are Dunlop 1.5 mm Primetones.

AMPS

Blair's main amp is a '70s Marshall JMP head (pictured left) modded by Johnny Meyer. His backup is a Marshall JCM900. His preferred cabs are two Marshall 4x12s loaded with Celestion Vintage 30 speakers.

EFFECTS

Middle: Blair runs his guitars into a Shure UR4D wireless, which sends his signal to a Radial JX44 Air Control. The Air Control not only sends his signal to each of the Marshall heads, but also has an effects loop that sends his signal to an RJM Rack Gizmo.

Below: His current crop of stomps includes a Boss NS-2 Noise Suppressor, an Ibanez TS9 Tube Screamer, an Eventide H9, and four MXR pedals—a GT-OD, a Phase 90, an Analog Chorus, and a Carbon Copy.

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HILLEL SLOVAK

The first guitarist for the Red Hot Chili Peppers helped pioneer a punk-funk-rock movement in '80s L.A.

BY TZVI GLUCKIN

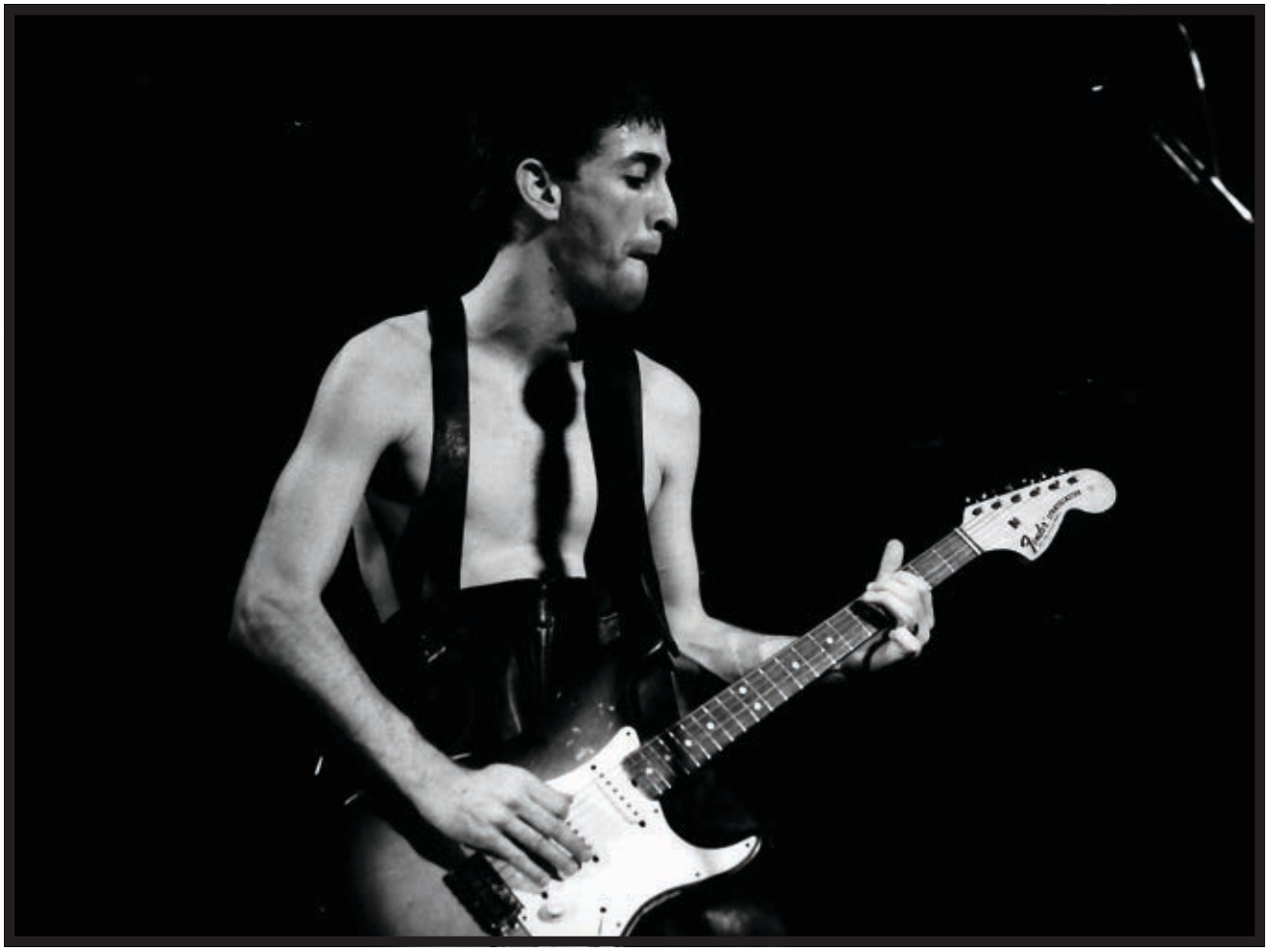
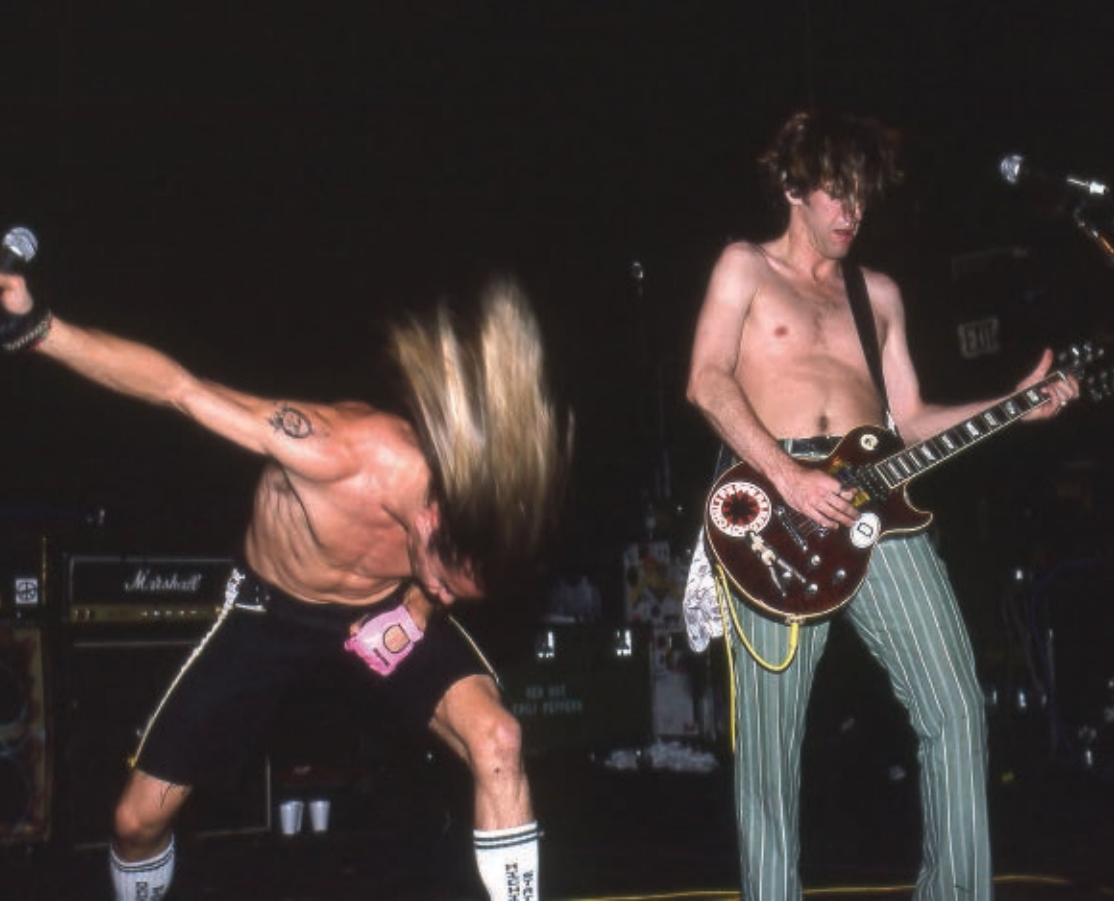


Photo by John Coffey

The 1980s were a time of bad hair, oppressive synth patches, preprogrammed hand claps, and the dawn of pop metal. But it wasn't all bad—great music was made then, too. And the Red Hot Chili Peppers, a young band that spent most of the decade underground—playing clubs, on college radio, and out of the limelight—were one of the era's most influential.

The early RHCP ate testosterone for breakfast. They were wild, aggressive, outlandish, bursting with energy, and often naked. Their live shows were legendary. Their music was an organic mixture of funk and punk and every young band wanted to be them—that "Chili-Peppers-punk-funk-thing" was ubiquitous and in demand. The local musicians classifieds were filled with bands looking for thumb-thumping, slap-happy bass players, rap-friendly frontmen, and guitarists well-versed in funk, but possessing punk attitude.



Anthony Kiedis (left) and Slovak perform at New Jersey's Capitol Theater in May 1988.

The epicenter of that original lineup was founding guitarist, Hillel Slovak. Slovak was an exceptional talent, steeped in the traditions of Jimi Hendrix and the funk stylings of Parliament-Funkadelic and Sly and the Family Stone. His playing paired the seemingly incongruous sounds of funk and punk and made it seem obvious and natural. His sense of groove was metronome-tight, his note choices were well placed and tasteful, his tone was fully developed, and his phrasing was mature beyond his years.

Slovak didn't live to see his band's breakthrough and mainstream acceptance, but his influence was dominant. It was essential to the development of his extraordinary successor, John Frusciante. It defined the sound of his band and the music they made. And it inspired a generation of rockers to dig deep into funk, purchase a wah wah, and get into the groove. Beginnings

Hillel Slovak was born in Haifa, Israel, on April 13, 1962. His parents were Holocaust survivors who settled in Israel after World War II. They moved to New York when Slovak was 4 and then to Fairfax, a neighborhood just south of the Hollywood Hills in Los Angeles, two years later.

Slovak's parents divorced when he was in high school. His mother kept the house in Fairfax and he continued to share a room with James, his younger brother. By that point, he was already serious about music.

Slovak started playing the guitar at 13. He listened to bands like Kiss, Led Zeppelin, Aerosmith, War, Sweet, Earth, Wind & Fire, and others that were popular at the time. According to Jack Irons, Slovak's childhood friend and future bandmate (and drummer for the Red Hot Chili Peppers, Eleven, Pearl Jam, and many others), "We talked about playing music when we were in 7th grade and started [playing instruments] later that year."

Alain Johannes (Eleven, Queens of the Stone Age, Them Crooked Vultures) met Slovak and Irons in 8th grade. "Jack and Hillel attended a local music school on Fairfax Avenue," Johannes says. "I went there for a few guitar lessons too and studied with Robert Wolin, the same guy [as Hillel]." (Wolin was a popular teacher at that time—he also taught Slash.)

Slovak's first guitar was a cheap, cream-colored Telecaster knockoff. He ran that through a Silvertone amp. "He liked to smack the top of the Silvertone to get the reverb vibrating loudly," Irons says. At some point Slovak acquired an MXR Distortion+ as well.

Slovak, Irons, and Johannes jammed and wrote music together. They added a bass player in high school. Their band went through a number of names before settling on Anthym (changed from Anthem when they discovered another band from the Valley was using the same name). Slovak also was given a better guitar. "I had a Musicraft Messenger, which was kind of rare," Johannes says. "Mark Farner [from Grand Funk Railroad] used to play one. It had an aluminum neck going all the way through the body. It was red, with a Bigsby on it, and I gave it to Hillel. That's what he played in those early years, until he got his Strat."

In the 11th grade, their bass player decided to focus on schoolwork and quit the band. They recruited another friend, Michael Balzary (better known as Flea), to play bass. At that time, Flea didn't play bass—he played trumpet—but he knew music and played in the school band. It didn't take much to get him up to speed. Slovak taught him the basics and got him started. Anthony Kiedis, another high school friend, MC-ed their shows and they were off.

"We graduated high school in 1980," Johannes says. "In late 1980 or early '81 we changed the name to What Is This. Our first batch of originals was very much in the classic rock style of the time. Hillel and I were doing dual lead solos and a lot of feedback and heavy playing. Then we started listening to some of the music that was coming up—post punk, new wave. We started to write a little bit more in that vein. We cut our hair and started wearing suits."

Some of those early influences included the Talking Heads, Gang of Four, and David Bowie. Slovak also gained a deepening appreciation for Jimi Hendrix. "If I would have to pick, Hendrix and [Gang of Four guitarist] Andy Gill are my two biggest influences," Slovak said about

Photo By Debra Trebitz / Frank White Photo Agency

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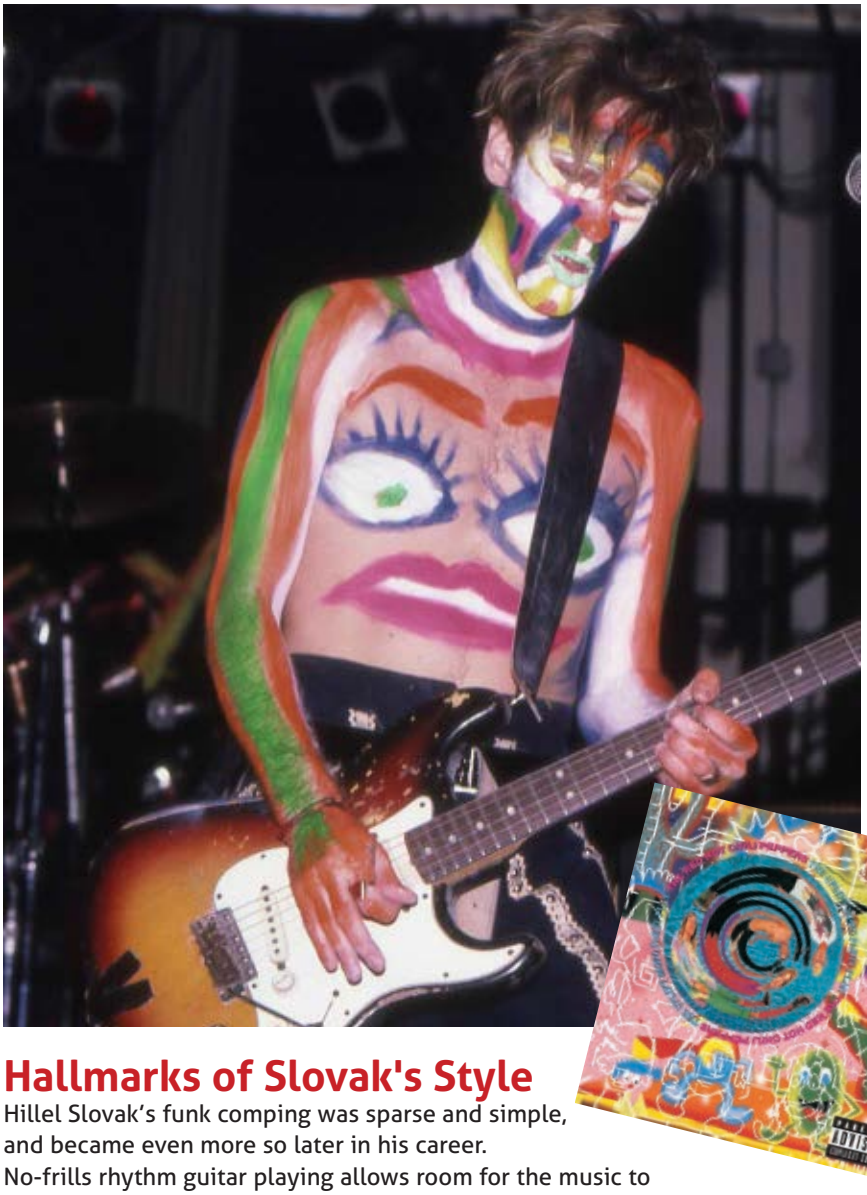
his formative years in a short video interview on Miami Beach in 1987.

Another important influence was '80s-era King Crimson. "They played the Roxy for three nights," Johannes says. "We got tickets for all three nights, both shows. We sat right up front and just soaked it in. Hillel definitely got a lot of the Strat manhandling—strumming behind the nut and all that kind of stuff—from watching Adrian [Belew] at that time. Our music became a little bit more unusual. A punk element started to show up, a bit of a psychedelic bluesy thing, more angular, a little more dissonant."

The L.A. hardcore punk scene was peaking at that time as well, with bands like the Circle Jerks, Black Flag, and Fear in their prime. In 1982, Flea left What Is This to join Fear and Chris Hutchinson replaced him. According to Johannes, Slovak was disappointed that Flea left the band and didn't speak to him for a while. But it didn't last.

Slovak lived in a loft space near the intersection of Heliotrope Drive and Melrose Avenue, a commercial/non-residential part of L.A. It was a perfect rehearsal studio—far from private homes and uptight neighbors—and rehearsals were often extended jam sessions that lasted hours. "We were always pushing ourselves, playing things that we couldn't quite get," Johannes recalls. "But I think the big secret was the insane amount of hours we spent jamming. We would often turn off the lights and just jam in the dark. We became really good at sensing each other."

In 1983, while What Is This were still working the local music scene opening for bands like the Minutemen and X, and trying to land a record deal, a local performance artist named Gary Allen invited Kiedis and Flea to perform at the Rhythm Lounge. Slovak and Irons joined them and the Red Hot Chili Peppers were born. Although intended as a one-off performance, the Red Hot Chili Peppers evolved into something much more. "They were



Hallmarks of Slovak's Style

Hillel Slovak's funk comping was sparse and simple, and became even more so later in his career. No-frills rhythm guitar playing allows room for the music to breathe while driving the groove forward. A great example of Slovak's minimal-yet-effective rhythm guitar parts are the repeated figures he lays down during the verses of the "Special Secret Song Inside" from the Red Hot Chili Peppers' 1987 release, *The Uplift Mofo Party Plan*.

Slovak sits on just two notes, C and F (technically E-sharp in this context), the top two notes of a D7#9. If felt as eighth-notes, Slovak plays that chord fragment on the downbeat and "and-of-2" in each measure.

And that's it.

That super-simple rhythmic pattern leaves ample space for colorful guitar overdubs and Flea's extra-groovy bass line. And because Slovak's figure is constant and repetitive, it creates a sense of tension that drives the verse forward until its ultimate release at the top of the chorus.

This approach is a common funk device and a tool Slovak applied with precision. Other examples include the funkier sections of "Subterranean Homesick Blues" and the verses of "Skinny Sweaty Man" from *The Uplift Mofo Party Plan* and "Nevermind" off the 1985 release, *Freaky Styley*.

Photo by Frank White

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pretty amazing straight away and they got a good reaction," Johannes says. "We would schedule our shows so that we would play the same dates or share the same bill. Both bands were sharing Jack and Hillel."

Within eight months, both bands landed deals with major labels. What Is This signed with MCA. The Red Hot Chili Peppers signed with EMI. Slovak and Irons opted to stay with What Is This. "We had been playing with Alain since 1976 and we were dedicated to What Is This," Irons remembers. "The Chili's were new at the time." The Red Hot Chili Peppers replaced Slovak and Irons—with Jack Sherman on guitar and Cliff Martinez on drums—and released their first album, *The Red Hot Chili Peppers*, in 1984.

Red Hot Return

That same year, What Is This went into the studio and recorded *Squeezed*, a five-song EP, with producer/engineer David Jerden (Jane's Addiction, Alice in Chains) and shot a video for the song "My Mind Have Still I" with then up-and-coming video director Wayne Isham.

Squeezed is a showcase for the twin-guitar lineup of Johannes and Slovak, who share rhythm and lead duties with complementary individual styles. The songs sound like early-'80s new wave and include funk, ska, and other groove influences. *Discipline*-era King Crimson is an obvious influence as well. The EP documents a new band on the rise, though in hindsight the production values sound dated. "Unfortunately it does sound a bit '80s," Johannes says. "But that's what everything sounded like back then—we were pretty mental-sounding live—but it was just the aesthetic of the time."

Slovak's playing oozes Hendrix—subtle psychedelic-blues riffage, modal inflections, tasteful whammy manipulations, clean single-coil tones via a cranked amp with infinite headroom—it's all there on those first recordings and remained dominant throughout his career. Slovak played a Strat throughout his career too: a '60s sunburst with a white pickguard and rosewood fretboard. Slovak kept the tremolo floating so he could raise and lower the pitch.

What Is This toured the U.S., continued to gig locally, and went back into the studio with Todd Rundgren to record *What Is This?*, their first full-length album. But Slovak was ready to move on. "I think Hillel grew less interested in What Is This," Irons says. "He left while we were recording our second record in 1985."

"I noticed that Hillel really started to focus on his songs in a hurry," Johannes says. "He'd already made up his mind to go back to the Peppers and he wanted to get them done. Once he'd gotten all the overdubs to the songs the way he wanted them, that was when he sat us all down and told us he was leaving."

Slovak rejoined the Red Hot Chili Peppers in time for their second album, *Freaky Styley*. Veteran funkmaster George Clinton produced the album. "That was a good time," James Slovak recalls about his brother's excitement working with Clinton. "That was when he was his happiest. It was his dream come true."

Clinton's personality is dominant on *Freaky Styley*. The album's slower tempos, horn arrangements, and unbridled funk stand out as an anomaly in the Red Hot Chili Peppers' catalog—a tempered variation on their supercharged, hyper-sexual, energetic live shows.

Freaky Styley establishes Slovak as a mature, articulate guitarist, and from his exceptional wah work on "Yertle the Turtle" to the infectious rhythm guitar of "Hollywood (Africa)" and "Nevermind," his tasteful playing shines on the album. Not every song was medium-tempo funk, either. The brazen "Catholic School Girls Rule" served as an outstanding platform for Slovak's Belew-inspired Strat mangling, harmonics, and picking behind the nut. In his October 1985 review for *Rolling Stone*, Ira Robbins singled out Slovak's guitar playing as: "A mix of crazed solos, nostalgic wah-wah, and rhythmic scratching."

In his book, *Scar Tissue*, Kiedis noted that Slovak's playing had changed during his time with What Is This, though Johannes isn't convinced. "His playing had been slowly evolving over a period of time," he says. "He became more groove-oriented—he got the wah wah, he had that great Marshall—and he started to develop and find his voice. But that had been happening anyway. He always kept moving forward and getting better."

Slovak's amp was a Marshall Super Bass head. He ran that through a handpainted, straight-front 4x12 cabinet. "It was very open sounding and had this great clarity in the midrange," Johannes says. The Strat plus the Marshall was the foundation of Slovak's sound. "He knew. It was like one big instrument to him, the way that Marshall was." Slovak used a number of pedals, including a Univox Super-Fuzz, a Dunlop Cry Baby Wah, an MXR Distortion+, and a Boss CE-2 Chorus. He usually strung his guitars with .010 sets and used gray 1.00 mm Dunlop picks.

YOUTUBE IT

This is the closest you'll get to a Hillel Slovak Rig Rundown.
YouTube search term: Hillel Slovak's Rig

This live clip of "Fight Like a Brave" at the Pinkpop Festival in 1988 features Slovak on a Les Paul about a month before his death.
YouTube search term: Red Hot Chili Peppers - Fight Like A Brave [Live, Pinkpop Festival 1988]

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The Red Hot Chili Peppers get goofy during a photo shoot circa 1988, just before Hillel Slovak's death. Left to right: Jack Irons, Anthony Kiedis, Slovak, and Flea.

Uplift Mofo Party Plan

Irons rejoined the Red Hot Chili Peppers in 1986. The band—in their original lineup for the first time since signing with EMI—continued touring in support of *Freaky Styley* before going to work on their 1987 release, *The Uplift Mofo Party Plan*, with producer Michael Beinhorn. "That record was probably the peak of the original lineup," Irons says. "We were well-oiled and played together a lot. We had a long preproduction and recorded at Capitol Records studios. Michael Beinhorn was very important in getting *The Uplift Mofo Party Plan* recorded. There was some turmoil at the time. He stayed the course with us from the start of preproduction and was an important influence."

The Uplift Mofo Party Plan is a punk-funk tour de force—a definitive record in that genre—and it established the Red Hot Chili Peppers as the darlings of the alternative underground. They sold out small venues, played major festivals, and were a fixture on college campuses and radio.

And in contrast to the understated guitar tones on *Freaky Styley*, *The Uplift Mofo Party Plan* spewed fuzz with abandon. From the opening notes of "Fight Like a Brave" to the dramatic call-and-response overdubs of "Walkin' Down the Road," Slovak's tone is dripping in dirt. He pulled out a talk box, too—an effect he experimented with previously—for an obvious funk nod on "Funky Crime," but also to add subtle color to the album's Bob Dylan cover, "Subterranean Homesick Blues." "I remember him fucking around with a talk box," says James Slovak. "He liked that."

Slovak's funk comping climaxed on *The Uplift Mofo Party Plan*. On many tracks, it consisted of just one repeated note or chord—a bold, barebones approach. One particular highlight is the '70s-style soul slickness he conjured up on the "Special Secret Song Inside." Slovak's solos and single-note fills were superb throughout the album as well—they scream bluesy psychedelics and reach a Hendrix-inspired peak with what sounds like record scratching or tape-machine manipulations on "Organic Anti-Beat Box Band."

"I remember him fucking around with a talk box—he liked that." —James Slovak

But the album's standout was "Behind the Sun," a track that foreshadowed what the Red Hot Chili Peppers were to become. Combined with Slovak's melodic playing and colorful sitar textures, the song's mellow vibe made it a notable exception to the band's aggressive early catalog.

The Final Tour

The tour for *The Uplift Mofo Party Plan* was long and successful, but drug use—something Kiedis and Slovak struggled with—was taking its toll. Slovak was fired at one point (P-Funk guitarist Blackbyrd McKnight filled in) and given time to dry out. He made a failed attempt at drug counseling as well.

Following the final European leg of the tour, the band returned to L.A. The plan was to take a three-week break and regroup to work on the next album. But on June 27, 1988, Slovak was found dead in his apartment from a heroin overdose. The coroner's report indicated he probably died two days earlier. He was buried in L.A., and his brother James made sure he was interred with his Stratocaster.

The Red Hot Chili Peppers had a strong underground following when Slovak died, but their breakthrough into the mainstream was yet to happen. As the *Los Angeles Times* noted in Slovak's obituary, "The Chili Peppers, which have released three albums on EMI-Manhattan Records since forming in 1983, have not gained national stardom. But the foursome's wild antics onstage have given the group a strong following in the Los Angeles area."

The Red Hot Chili Peppers went on to become one of the biggest rock bands of all time. They found mainstream success, placed hits on the charts, and their albums sold in the millions. Even so, many fans consider the Slovak period to be RHCP's golden years—and maybe they were, as their influence was never the same as it was in the late 1980s when every young band wanted to be them.

At Slovak's 2012 induction into the Rock and Roll Hall of Fame, James Slovak, accepting the honor on his brother's behalf, said: "[Hillel] was much more than a musician, he was also an innovator." That heartfelt statement couldn't have been more accurate: Slovak's guitar playing impacted the musical landscape forever.

Photo by William Hames / Atlas Icons

PORTRAITS IN TONE

Richie Kotzen RK5

For the bulk of his 2014 tour with the Winery Dogs and his recent solo tour, Richie Kotzen was spotted using a mysterious red pedal by Tech 21. Countless photos and questions were posted on the internet by fans craving to know more. A gifted player known for his unique style, Richie is also highly respected for his tone, so who could blame them?

Not just another version of the Fly Rig 5® simply bearing his name, the Richie Kotzen RK5 Signature Fly Rig was a close, year-long collaborative effort. Meticulous about every facet of his playing, singing, songwriting and tone, Richie's attention to the details of this pedal was nothing less. What distinguishes the RK5 from the Fly Rig 5 is Richie's Signature OMG overdrive. Tuned specifically to Richie's ear, the OMG section brings in the organic Class A-style distortion, but with a tighter, snappier response. It is designed to articulate every nuance of Richie's dizzying playing style for all modes and moods, from clean to aggressive and from rhythmic chords to infinite sustain when it's solo time.

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photo by greg vorobiov

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Essential Gig Tips for Acoustic Guitarists

Do you perform with an acoustic guitar? Check out fingerstyle wizard Pete Huttlinger's SECRETS for sounding great onstage.

BY PETE HUTTLINGER
PHOTOS BY ANDY ELLIS

Top: What happens if you sail a bridge pin somewhere into the audience while changing a broken string onstage? The show must go on, but without a spare pin, you're SOL.

Bottom: A mic bag should hold all emergency spares other than than your extra cable.

Playing gigs can be a very rewarding experience for you, your audience, and even the soundman. (These days there are more women mixing sound than ever, but for simplicity I'll stick to "soundman" in this article.) My credo is simple: "Everyone from the ticket-taker to the soundman, the usher to the venue owner, and of course, the audience, will have a great experience when I show up." This has served me well for decades, and over the years I've learned that being well prepared is at least half the battle. With that in mind, I'd like to share a handful of tips that may help you have great gig experiences too.

Guitar Check: Everything in Order?

It all starts here, right? Your first order of business is to be sure your guitar is in good working order. Is the action adjusted so you feel you can play your best? For the kind of gigs I do—solo fingerstyle instrumentals—the action can make or break a gig. If it's too low, the strings will buzz, the sound will be thin, and I won't be able to get any meat out of my guitar. But if it's too high, my left hand gets worn out halfway through the show. Adjusting neck relief and action is something many players can handle themselves (for details see "10 Ways to Optimize Your Guitar for Under $100" on p. 82), but if you don't have the tools or know-how, getting a pro setup is one of the best investments you can make as a gigging musician.

Are the strings new or should they have been buried last week because they are D-E-A-D, *dead*? Whenever possible, I like to change strings *before* soundcheck because I want to give the soundman an accurate representation of what the audience will hear during the gig. Think about it: If you do your soundcheck with dead strings, the soundman may feel a need to bump up the high-end frequencies to compensate for your deep, thuddy tone. But then when it's showtime and you're playing a fresh set of strings, the sound will be too bright.

> **"Nothing is worse than the crackly sound that occurs right before your pickup dies."**

Is your guitar strap okay or is it going to break or pop off in mid-song and launch your guitar into the third row? Believe me, it can happen. Do yourself a favor and check your strap from time to time. Pay close attention to the slits that encircle the strap buttons. Eventually they stretch out and lose their grip.

If you have onboard electronics, periodically install a fresh battery. Nothing is worse than the crackly sound that occurs right before your pickup dies. And if it can die during your favorite piece, it will. It has happened to me and it is *not* fun. Change your battery once every six months and you won't have to worry about the pickup going out.

Be prepared: Carry a small pouch or kit containing extra strings, a string cutter, small screwdrivers, a truss rod tool (confirm that it's the right one for your *current* guitar—not the one you were gigging with last year), extra picks, a spare capo, spare batteries, several cables, and whatever else you'll need to get through the night. You *will* need this gear—it's a cosmic rule—so it's a good idea to make a checklist and review it before you leave the house.

Acoustic Amplification

I realize "acoustic amp" is an oxymoron, but if you do use an amp, choosing the right one can be a daunting task. There are many excellent acoustic amps on the market and over the years I've owned quite a few of them, including a SWR California Blonde, a Fishman Loudbox Artist, a Roland AC-60, and an AER Compact 60. I've even used Fender, Peavey, Marshall, Carr, and many other electric guitar amps onstage.

My personal favorite is the AER Compact 60. It's a bit pricey (about $1,200 street), but I love that it's small and light (it weighs just over 14 pounds), it fits in the overhead compartment on Southwest Airlines

planes, it has a very deep and full sound, and it's very reliable. In fact it works so well for me that I bought a second one to have as a backup. That was around 2002, and so far the only thing that has ever gone wrong was when I played on a military base running on a questionable power source and the amp kept blowing fuses. (If you elect to take the acoustic amp route, remember to pack spare fuses in your emergency kit.)

As a side note: I typically use my Compact 60 on every gig because I want to know that I'll always have a good monitor. Occasionally a venue will have stage monitors that are just bad—no life in them, too thin sounding. In those instances, I ask the soundman to turn off the stage monitors entirely and I just use my AER.

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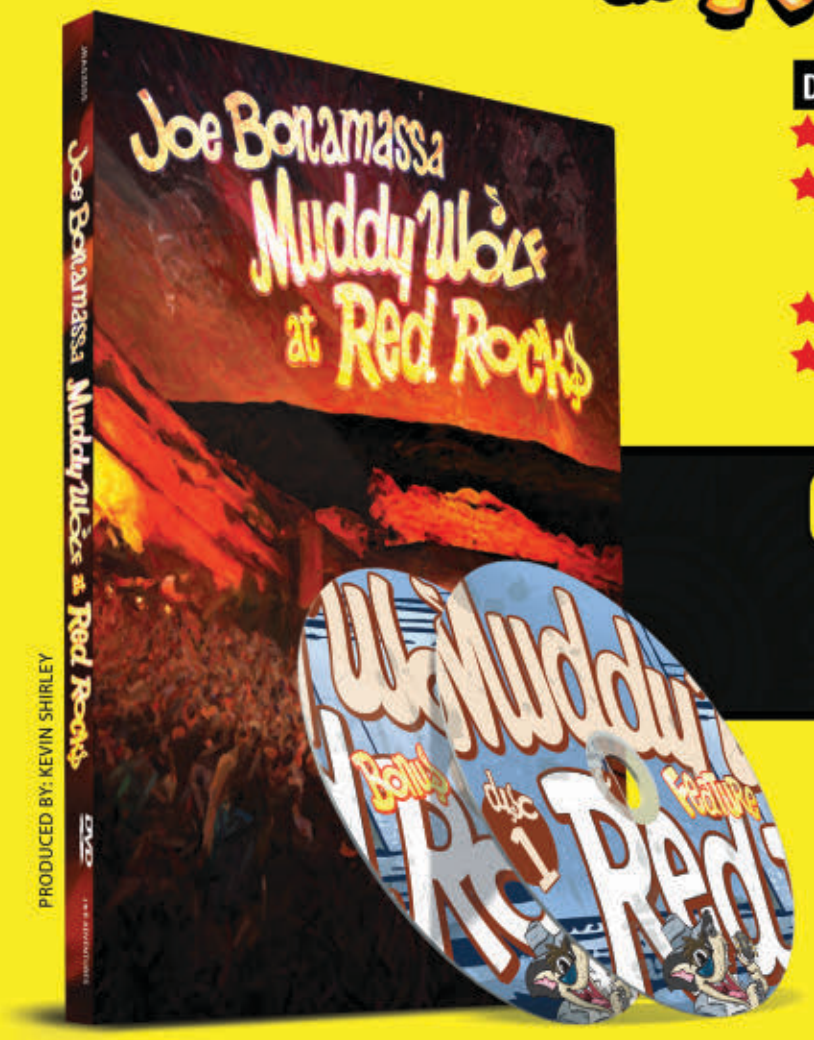

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DI boxes come in many configurations, and can include onboard EQ or even a tuner.

of-house mixing console. The DI's job is to take a guitar signal from your endpin jack and convert it to a balanced, low-impedance signal like that of a professional mic. The DI is usually located onstage and placed directly in front of you, your chair, or your mic stand.

Here's the configuration: Plug a standard 1/4" cable between your guitar and the DI input, and use a XLR mic cable (or house snake) to connect the DI to the house mixer. As with amps, there are *lots* of makes and models of DI boxes. Many are battery operated, but some can run on phantom power from the console. DI boxes provide impedance matching or buffering, and may offer such extra goodies as a ground lift, a signal pad, a phase switch, a second "thru" output to feed a stage amp, and even onboard EQ. Most players don't carry an amp, but these days many of us carry a DI because every venue is different and we want some consistent control over our sound.

A Countryman DI is great. The company has been around forever because their DI boxes are durable and give a consistent, clean representation of what's being fed into them, i.e. your guitar. So is the Para DI Acoustic Preamp from L.R. Baggs. It has 5-band EQ and that can be a big plus for shaping your tone and also notching out feedback.

For the past several years, I've been using the Fishman Aura Spectrum DI. It has an onboard 3-band EQ, a simple one-knob compressor, a chromatic tuner, and a footswitchable anti-feedback circuit. (You need to be careful with the latter, as it can rob tone—but in a pinch, it's great.)

"When you place a device in your signal path and it's in the wrong spot, it can wreak havoc on your amplified acoustic sound."

What I love about this particular DI is Fishman's "acoustic imaging" technology. Fishman engineers have recorded many types of guitars using a variety of different microphones, and then stored digital models (or "images" in Fishman parlance) of these sounds in the Aura Spectrum. You simply select the type of guitar you're playing—dreadnought, concert, or jumbo, for example—and then dial in one of 16 variations of this body type stored in the onboard image bank. Using a blend knob, you mix in the replicated sound of a miked guitar with your live signal to create an amalgam of the two. I've found this works well to tame the quacky sound of an under-saddle piezo pickup.

Before you purchase a DI box, try out as many as you can. Remember to balance features with simplicity—you want a device that you're comfortable operating onstage and isn't so complicated that you get distracted from delivering a great performance.

Know Your Signal Chain

When you place a device in your signal path and it's in the wrong spot, it can wreak havoc on your amplified acoustic sound. Here, as with all of my gear, I like to keep it simple. I go out of my guitar into my DI first. The DI feeds the house mixer, but I also take a second line out from the DI and go into my acoustic amp.

This is different from most guitarists, who will typically go into their amp first, then from their amp into the DI, and then to the mixing console after that. I choose my approach because I want the DI to color the sound *before* it hits my amp. I want to hear what the soundman—and ultimately, the audience—is hearing.

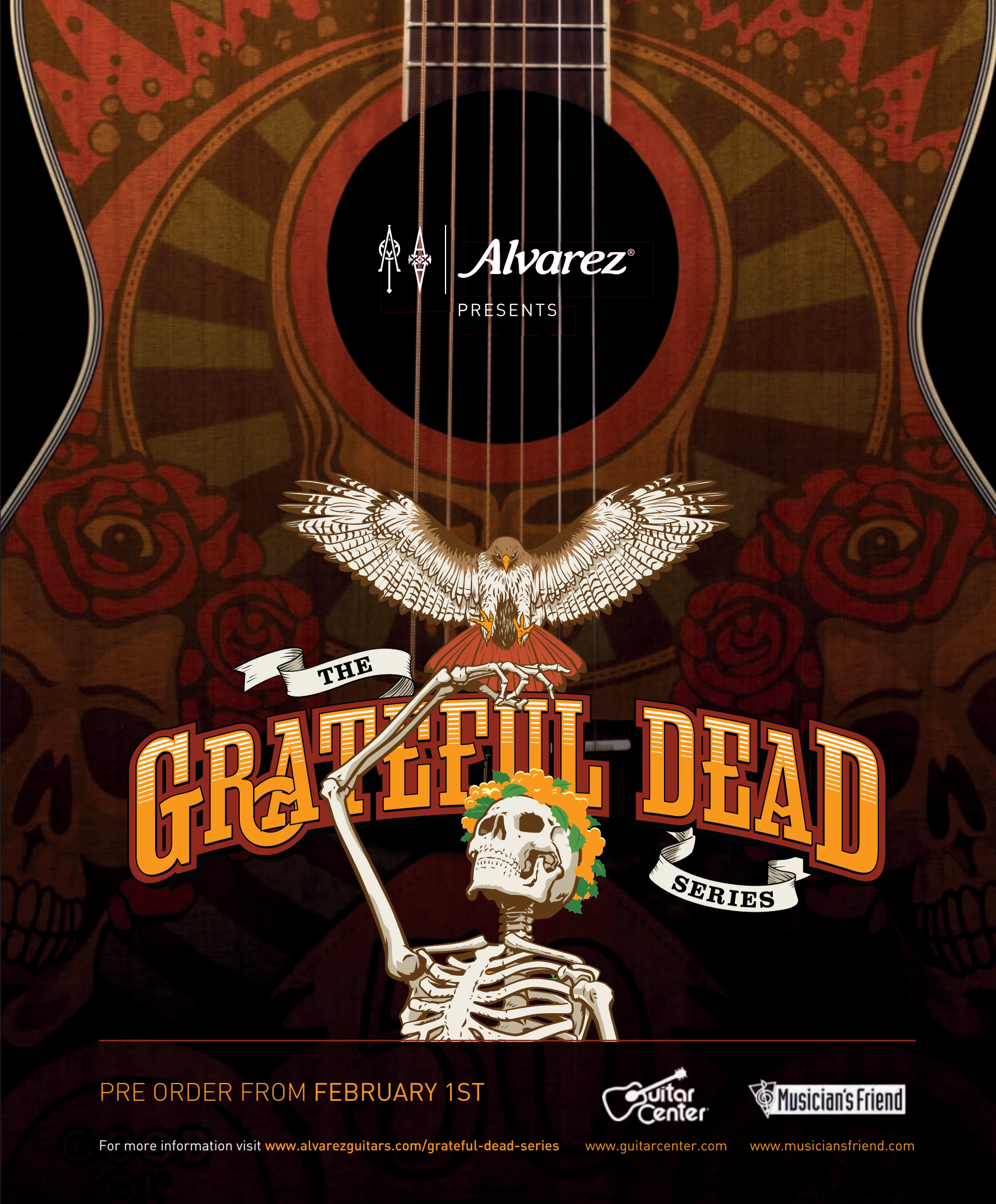
Working with the Soundman

Okay, let's first discuss the best strategy for handling a bad soundman. Last week I did a gig in Nashville, where I live. It was at the convention center and it was for 1,000 people who were all seated at dinner tables. I was to give a talk and then play one tune. Just one tune.

But the soundman, who was from out of town, got things off to a bad start the minute I walked in. He said, "I just found out you're playing." That's never what the artist wants to hear—I'd been booked on the date for over a month. "You're not going to be very loud," he continued. I looked at him and said, "I'm playing an acoustic guitar. I want everyone to be able to hear me." "They'll hear you," he said forcefully, "you just won't be doing an acoustic rock show here tonight."

From there, things went downhill fast. He obviously didn't know me or anything about my playing. I plugged in and started to go through a piece. My manager began walking around the room to hear what my guitar sounded like. The soundman yelled at her, "You don't need to walk around here. I already walked the room." My manager replied, "But you haven't even heard him play yet. Don't you walk the room while he's doing the soundcheck?" "No," he declared, "there's no need for that. I've already done it."

At that point I unplugged my guitar and said, "We're done." Because I couldn't do anything about my sound and was extremely frustrated, I was tempted to do the old trick where you turn down at soundcheck and then put the pedal to the metal in the middle of your first tune. But that's *never* a good idea. I'm well aware the soundman has the power to ruin the show if I pull a stunt like that. So instead, I took one for the team.



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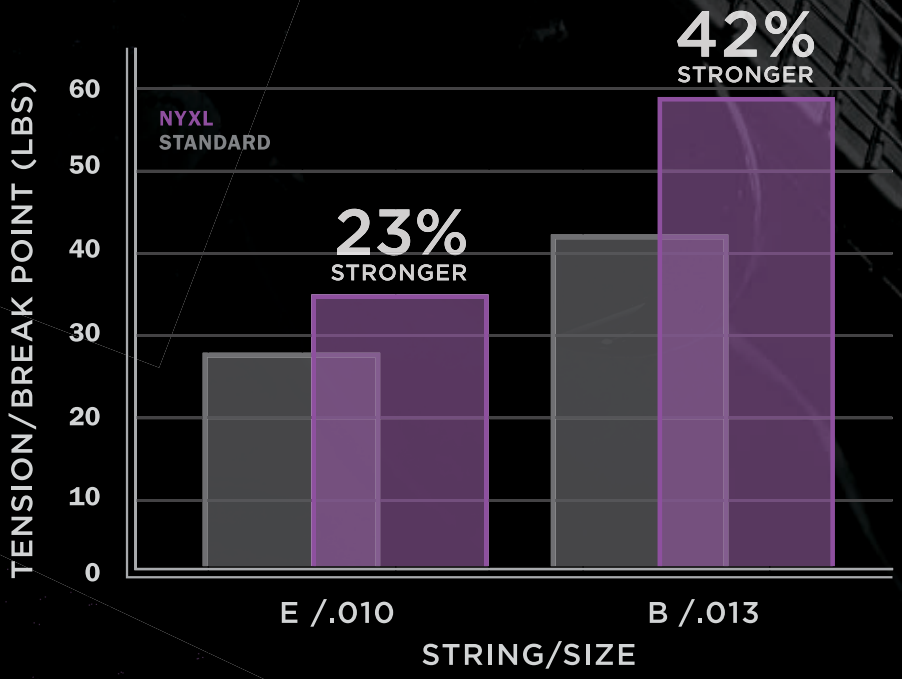

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The gig went fine. I assume the audience heard me because I received a standing ovation. But after that delightful soundcheck, I never spoke to the soundman again.

But that's an unusual situation. Let's talk about the good soundman—which is more the norm. Usually when you do a soundcheck, the soundman has your interests in mind. It's not his job to shape your sound, but to help you achieve the sound that works for you. With that in mind, a good soundman will give suggestions about your stage volume (typically only if you're too loud) and will work with you on the monitors to get them sounding just the way you want. It's in the soundman's best interest because if your sound is good, then his job is easier.

Unless there's an issue, a good soundman shouldn't have to mess with your sound during your performance. Often a little feedback in the first tune requires a few quick knob turns and that should be it. He should respect your wishes with the sound and you should respect his desires for the room.

Remember that a house soundman may work in a given venue five nights a week or more, so he knows the room better than you do. He knows what the room is going to be like when it's full of people compared to when it's empty at soundcheck. If you seem a little loud at soundcheck, that's okay. Once the audience arrives, they will absorb the sound. Tell him if the sound is a little bright during soundcheck. If he says that's normal for the empty room, trust him. But if you start your gig and it's still too bright, dark, or whatever, don't hesitate to let the soundman know. Don't make a big deal out of it, just communicate this to him. Remember the audience probably can't tell the difference, so don't let it disrupt the evening.

Working with Monitors

It's okay to ask the soundman to turn off the house speakers while you're listening to the stage monitors during soundcheck. Many people try to do both at the same time, but it's best for you to hear the monitors by themselves. Once you're happy with the stage sound, the soundman will adjust the house speakers to make sure you sound good through them too. While that happens you'll have another chance to hear the monitors again, but this time in conjunction with the house system.

Occasionally the mixing board doesn't offer a way to EQ or sonically tweak your monitors independently of the house sound. I hate it when this happens, but it does. In such cases, your only option is to find a happy medium where both you and the soundman are satisfied.

As I mentioned earlier, this is why I always carry my AER amp. At a recent gig in Georgia, the monitors not only sounded terrible but they were tied directly to the house sound. I had the soundman kill the monitors and I simply used my AER as my onstage monitor. Not ideal, but problem solved.

As a performer, you have to accept the fact that not every room on every gig will be optimum. But if you plan ahead, arrive prepared with all of your gear in gig-worthy condition, work professionally with the soundman—and above all, keep the audience in mind—enough of the gigs *will* be very good to make it all worthwhile. And once in awhile, you may get one of those magic nights ... and isn't that what it's all about?

PETE HUTTLINGER - *Winner of the 2000 National Fingerstyle Guitar Championship, Huttlingeris one of the world's most awe-inspiring acoustic guitarists. He has performed at three of Eric Clapton's Crossroads Festivals and has released numerous albums, including the critically acclaimed Finger Picking Wonder: The Music of Stevie Wonder. Visit petehuttlinger.com for more information.*

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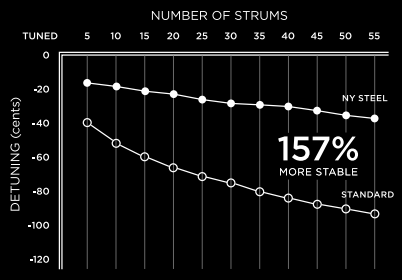

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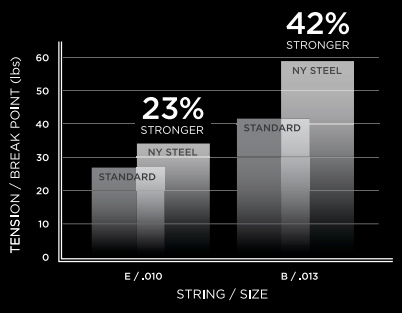

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Gibson

1958 Gibson EB-1

BY DAVE ROGERS, LAUN BRAITHWAITE, AND TIM MULLALLY

Gibson introduced its first solidbody bass guitar in 1953. Named simply the Electric Bass, it was Gibson's response to Fender's Precision Bass, which was released in late 1951. With its elegant violin-shaped solid mahogany body and short-scale neck, Gibson's EB was constructed very differently from the Precision.

The 1956 Gibson catalog reads: "With 20 frets on a scale length of 30 1/2", the Gibson Electric Bass has the same range as the standard bass 'fiddle'—and the same pitch. The Gibson Electric Bass has an adjustable end pin, and also a shoulder strap, and thus may be played either in a standing position or like a guitar."

The Electric Bass had one very large single-coil pickup in the neck position, which delivered strong, deep tones. Even though it was reasonably priced, the Electric Bass did not sell well and was discontinued during 1958 in favor of the semi-hollow EB-2 (1958), and the double-cutaway solidbody EB-0 (1959).

The bass pictured here has most of the typical features expected of an EB from between 1953 and 1958. These include, as stated in the 1958 Gibson catalog: "Solid mahogany, violin-shaped body and carved top. Mahogany neck with Gibson Adjustable Truss Rod construction. An important factor in the outstanding performance of this instrument is the Gibson-designed metal bridge, adjustable for string height and lengths."

The headstock has a Gibson logo set in pearl inlay and two banjo tuners on each side. The only unusual characteristic is that this bass with a 1958 serial number has a factory stock humbucking pickup—not used until 1959. The pickup was developed by Seth Lover to be used on the EB-0 and EB-2. It was the same size as the original enormous single-coil, but was split into two coils. A possible explanation is that this bass was nearly finished and stamped in 1958, but for some reason, not completed until at least 1959. The Gibson Shipment totals for 1958 indicate that 45 EB-1s were shipped that year. It's difficult to know whether this bass is one of those, or one that slipped through later without being counted.

The 1958 list price was $235, plus $45 for a hardshell case. The current value for one in excellent all-original condition is $5,000.

Sources for this article include: *Gibson Electrics: The Classic Years* by A.R. Duchossoir, *The Fender Bass: An Illustrated History* by J.W. Black and Albert Molinaro, *Gibson Shipment Totals 1937-1979* by Larry Meiners, and Gibson's 1956 and 1958 catalogs.

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Dave Rogers' collection is tended by Laun Braithwaite and Tim Mullally and is on display at:
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Photos by Mullally and text by Braithwaite.

Opposite page: This 1958 Gibson EB-1—serial number 82933—has a mysterious past. How did it get a factory-installed pickup that wasn't available until 1959?

Left: To accommodate two different playing positions, the solid mahogany body sports both a strap button and retractable endpin.

Below: The EB-1's banjo tuners give the headstock a sleek look when viewed from the front.

Click here to hear this guitar at premierguitar.com

Vintage Icon Series V6 Distressed S-Style

BY WILL RAY

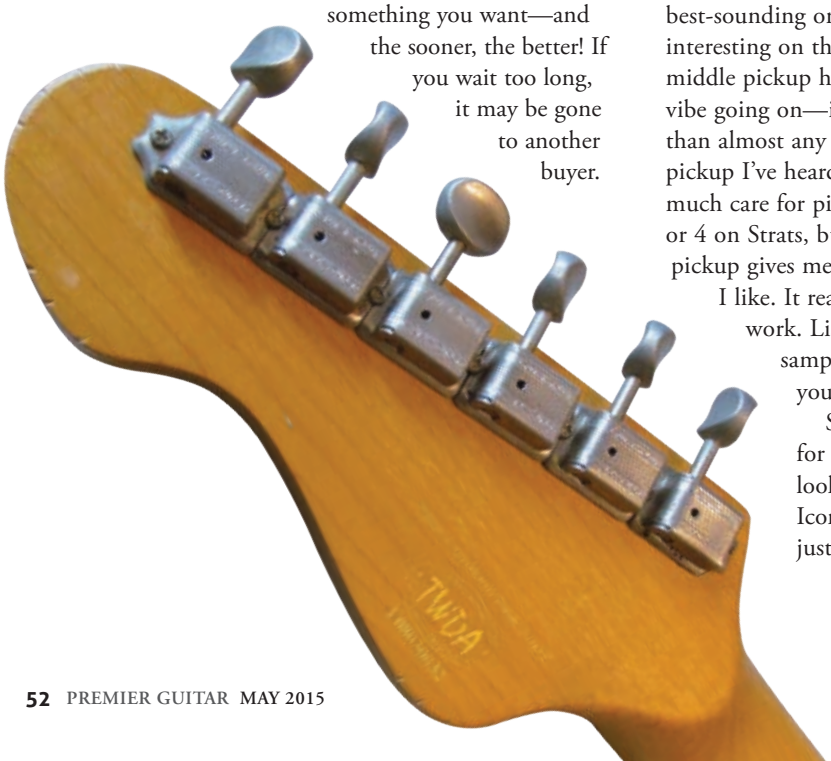
A few years ago at the Anaheim NAMM show, I ran across a booth selling cool factory-made "distressed" guitars. Legendary guitar inventor Trev Wilkinson was part of the company, so I took notice. I ended up getting a Tele-style guitar of theirs and have loved playing it ever since.

Several years later I wondered what one of their Strat-style guitars would be like, so I went to eBay to look around. Within a year I had been outbid on several black V6 Icons and that bummed me out. I really wanted one.

A few months later on eBay I saw this distressed Icon V6 Strat-style guitar in antique off-white for $350 with free shipping. (The going price for these was between $400 and $600 new.) I watched it for several weeks, not yet motivated to pull the trigger. After a while the seller lowered it to "$325 or Best Offer." Ah—the old "or best offer" had appeared, and this bottom feeder was going to take full advantage of it!

I offered the seller $275. It was the first day of a 30-day auction, so I didn't expect a response right away. But to my surprise he accepted my offer within an hour.

Bottom Feeder Tip #776: It never hurts to make a best-offer bid on something you want—and the sooner, the better! If you wait too long, it may be gone to another buyer.



The worst that can happen is they say no.

The guitar arrived a week later. I unpacked it and did a little picking, and boy, was I pleasantly surprised. The neck played a lot like my old '64 Fender Strat, and the pickups were punchy and vintage-sounding. Its period-correct appointments included vintage-style tuners.

It's rare I receive a guitar that I don't have to adjust anything on, but this was one.

It's rare I receive a guitar that I don't have to adjust anything on, but this was one. The action was perfect for me right out the box. It was strung with a set of .009s, which I find well-suited to Strats, and the neck had just the right amount of relief. It played perfectly! And it sounded like a '60s Strat when plugged into an amp.

I've always been a fan of Trev Wilkinson. He understands the art of designing great pickups, tremolos, and bridges. His pickups are some of the best-sounding ones out there. What's interesting on this model is that the middle pickup has some kind of voodoo vibe going on—it really sounds better than almost any other Strat middle pickup I've heard. I normally don't much care for pickup positions 2, 3, or 4 on Strats, but this particular middle pickup gives me the kind of "spank" I like. It really growls for lead work. Listen to my sound sample, and see what you think.

So is it a keeper? Yeah, for now. I was originally looking for a black Vintage Icon, but this one will do just fine, thank you.

WILL RAY *is a founding member of the Hellecasters guitar-twang trio. He also does guitar clinics promoting his namesake G&L signature model 6-string, and produces artists and bands at his studio in Asheville, North Carolina. You can contact Will on Facebook and at willray.biz.*

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HIGH FLYING BIRDMAN

Twenty years after Oasis' biggest hits, Noel Gallagher isn't looking back—in anger or otherwise.

BY ADAM PERLMUTTER

It's hard to overstate Noel Gallagher's importance in British rock and pop. As the lead guitarist and primary songwriter for Oasis—the 80-million-album-selling Britpop group fronted by his younger brother, Liam—Gallagher penned such epic hits as "Wonderwall," "Don't Look Back in Anger," and "Champagne Supernova."

But since the group's 1990s inception, Gallagher's musicianship has often been overshadowed by his outsized persona. Tabloids chronicled the Gallagher brothers' debaucheries, their rivalry with fellow Britpop band Blur, and the countless brawls that culminated in Oasis' 2009 breakup.

Noel Gallagher, now 47, endured a rough childhood in a Manchester suburb. As a teen he developed a tendency for hooliganism and a love of rock 'n' roll. In the late '80s he auditioned as the vocalist for the local band Inspiral Carpets, whose singer had quit. He didn't make the cut but signed on as their roadie. Then, after returning from a 1991 tour, he joined his brother's new band, which would be called Oasis, with the agreement that he would write all the songs.

The band's debut, *Definitely Maybe*, went straight to No. 1 on the U.K. charts, the fastest-selling debut album in British history. Just as quickly the Gallagher brothers developed their reputation as enfants terribles, fighting throughout the tour in support of the album. Their sophomore release, *(What's the Story) Morning Glory?*, fared even better, easily achieving multi-platinum status around the world as the spats continued.

After Oasis broke up, Liam Gallagher regrouped with members of the band to form Beady Eye, since disbanded, while Noel spent a couple years out of the limelight. The elder brother reemerged as a solo artist in 2011, releasing a self-titled album with his High Flying Birds, which topped the U.K. charts. The High Flying Birds' second album, *Chasing Yesterday*—Gallagher's first effort as a producer—finds the musician in top form, both in terms of song craft and guitar playing. From the moody Dorian vibe of "Riverman" to the unexpected tonal shifts of "Ballad of the Mighty I," it's an instantly pleasurable listen.

Speaking via telephone from his London home, Gallagher recently held forth on the state of modern music, his methodology, and his sexy 1960 ES-355.

Photo by Lawrence Watson

Noel Gallagher gigs with Oasis in 2005. The band is gone, but the ES-355 remains.

You've expressed misgivings about being a solo artist. How's it been so far?
I expressed that? Well, it might have been a few years ago, and I'm over it. If you've got good songs, and if you've made good records, then nothing else matters. A wise man said, "As long as your shit is good, *you* don't matter." I don't think people are coming to see me—there's not much to see here. They're coming to hear my songs.

What makes your shit good?
I don't know—I find it very difficult to describe. But there must be something there 'cause there's lots of girls who love my songs.

You're known to reference other artists' songs in your work, for example the Stevie Wonder song "Uptight" on the Oasis song "Step Out." Is this intentional?
I'm a product of my record collection. I don't get sued, so I don't really steal melodies—it's not intentional. I don't know, and I don't care how it happens. There are only so many chords—what are you going to do, copyright them? It's impossible not to step on someone's toes. In the case of "Step Out," it was obvious that the chorus sounded like "Uptight," so we were advised to include Stevie Wonder on the credits to avoid causing problems—unlike "Blurred Lines" [the song for which Robin Thicke and Pharrell Williams were successfully sued by the Marvin Gaye estate].

"There are only so many chords—what are you going to do, copyright them? It's impossible not to step on someone's toes."

What do you think about that verdict?
I listened to both songs and don't see what all the fuss is about, but I guess you can't argue with a judge.

What are the records in your collection that have meant the most to you as a songwriter and guitarist?
The ones I keep returning to are *The Wall* and *Wish You Were Here* by Pink Floyd. *Revolver* and *Sgt. Pepper's* by the Beatles—you may have heard of them. *Never Mind the Bollocks* by the Sex Pistols. *Let It Bleed* by the Rolling Stones. *The Kinks Are the Village Green Preservation Society*. *The Best of the Who*. Great music by great bands that have withstood the test of time.

Is all modern music rubbish?
I tend not to like modern music—we've already lived through the golden era. And I think "modern rock" is a fucking awful, horrible term. I'm not even sure what it means, but if I knew what kind of music it was, I'm sure it would be horrible too. I don't think any great new bands have emerged in the last 10 years—none that have staying power and who are bands you can believe in.

So you don't like anything new?
I do in fact like dance music, and I think that some great songs have been written in the last 10 years, and probably in the last 10 months, or even the last 10 days.

Photo by Eddie Malluck / Atlas Icons

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Right: Noel Gallagher in the studio with Johnny Marr, one of his heroes. The guitarists collaborate on the latest High Flying Birds release.

Like what?
Like Alt-J's "Left Hand Free," "Zombie" by Jamie T. Great stuff.

Do you have any reflections on *Definitely Maybe* and *Morning Glory* having turned 20? Any nostalgia for the '90s?
I have nostalgia for my waistline. When I play the old songs live, I don't play them for me, but for my fans. I haven't really listened to the [anniversary] reissues because I was busy working on this record, but given that *Morning Glory* took only 12 days in the studio, given the chance I would probably re-record most everything.

How has your musicianship evolved since then?
Well it certainly has evolved, but I couldn't tell you how. You can surely see it in a track like "Riverman." I couldn't have pulled that off back then. [*Phone rings in the background.*] Excuse me for a moment. [*Returns.*] That was Russell Brand, would you believe?

Do you tend to write differently, or steer away from certain song types, now that you're not writing for a belter like your brother Liam?
No. A good song is a good song is a good song, and it works for me as long as I can play it on the guitar. I might not be a belter, but if I go into the studio having written 12 great stadium-rock songs, I'll record them all. Stylistically it doesn't matter.

What's it like for you to write a song?
It varies, but it all tends to start with me and my guitar when the inspiration strikes. I might write 15 great ideas in three weeks, knowing that only two or three of them will end up on a record. I really put quality above quantity, and after all these years, I still love writing songs.

How did you come to produce yourself on *Chasing Yesterday*?
It was kind of accidental. When I thought I had finished the demos, I took them to one producer, who said they needed more work. Then when I took them to another producer, and he said that the album was already finished. So I didn't really have a chance to second-guess myself. I could have gone and tinkered with the album, but I bravely left it alone.

It sounds like a lot of thought went into the arrangements, with details like the occasional string section, harmonized female vocals, and even a bass clarinet.
Yeah. I usually record a demo of a song, just with me playing acoustic, and then I'll listen to it over and over until I follow my instincts and fill in all the details. Listening back, I think, "What if we add a girl here?" or "The thing this needs is strings." Nothing is ever off the table.

Who plays the great guitar solo on "Riverman"?
That's Paul Stacey, who also plays the solos on "The Girl with X-Ray Eyes" and "The Right Stuff." If I can't quite play the solo I want, I'll give it to Paul, and he'll nail it in one live take. Paul is fucking amazing.

You used to favor Marshall stacks, but now you use lower-powered amps. When and why did this shift happen?
For the last 10 years I've used Custom Hiwatt heads, and in the studio for this

Photos by Lawrence Watson

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record I used a great blackface Fender Deluxe. At home I play a [Fender] Blues Junior. Once you hit 35, you just can't use a Marshall stack anymore. It's against the law—if you play one, then you're a fucking asshole. It's just the same when it comes to lifestyle. When you're in your twenties, you have the power, drive, ambition, and arrogance to change the world—a lot of unrealistic shit going on. Then you get older. I loved all the sex and drugs and rock and roll when I was younger, but if at 47 you're still living the same as when you were 27, then you're a fucking asshole.

> "My 1960 ES-355 is the greatest guitar I've ever played. Johnny Marr no less picked it up in the studio, then looked like a startled wizard because of how fucking great the guitar is."

Talk about your affinity for the Gibson ES-355.

I've got two or three, and some ES-345s, too. My 1960 ES-355 is the greatest guitar I've ever played. It can do anything, and it's become a part of me. [Ex-Smiths guitarist] Johnny Marr no less picked it up in the studio, then looked like a startled wizard because of how fucking great the guitar is. I got the 355 a while back for 4,000 pounds, and it's the best 4,000 pounds I've ever spent. I've taken the guitar on four or five world tours and beat the living daylights out of it, but it still sounds and plays incredible. I'm in awe of the guitar. I put it second to my wife only because I can have sex with her. If I could have sex with that guitar, I'm not sure which I'd choose.

What was it like to work with Marr, one of your personal heroes, on "Ballad of the Mighty I"?

It was great—he's a genius. He didn't do any preparatory work before he came to the studio, didn't want to hear the backing track in advance, or even anything about the song at all. He just came in and without any direction played immediately the right thing—what you hear on the record, beautiful stuff that I myself couldn't have pulled off.

What other guitars do you play on the record?

I've got two Nash guitars that might be the best Fender-style guitars I've ever played. One, a cream 1963 Strat, is all over the record, and the other, a '72 Deluxe Tele, delivers an amazing sound. Whoever built these guitars is brilliant.

What about acoustics?

I played the same Gibson J-150 I've had for about 20 years and a newer Martin D-28, a brilliant, beautiful guitar with a Baggs pickup system. I bought the Martin brand-new just before my first solo world tour. When it arrived it sounded like a great guitar, but now, even though it's just four years old, it's completely broken in and sounds incredible. I haven't been precious with it, and when people see it, they assume it's an old guitar. There's a tip for the youngsters: You have to play your guitar every night instead of just leaving it in the case. Otherwise, what's it for?

What's with the electric washboard mentioned in the album credits?

It's not true—just a joke to fuck with the British press, who are assholes with their ridiculous questions about what you ate for lunch and where you hang out.

That's funny. Speaking of comedy, I understand you're a big fan of Seinfeld.

Yeah! I love it. Back when it started, I was maybe the only person watching it in England. I love all the characters and the secondary characters. It's an amazing piece of televisual art. But I'm glad it bowed out when it did. All TV things seem to go on too long these days. I've got all of the episodes at home, and if I have 30 minutes with nothing to do, I pull one out. Even though I know all the jokes and I know what's coming, they still make me laugh after 25 years.

NOEL GALLAGHER'S GEAR

GUITARS

1960 Gibson ES-355
1990s Gibson J-150
1990s Gibson J-200
Recent Martin D-28
Recent Nash S-63
Recent Nash T-72 DLX

AMPS

Hiwatt Custom 50 with 2x12 speaker cabinets
Fender Blues Junior
Fender Deluxe Reverb (blackface)

EFFECTS

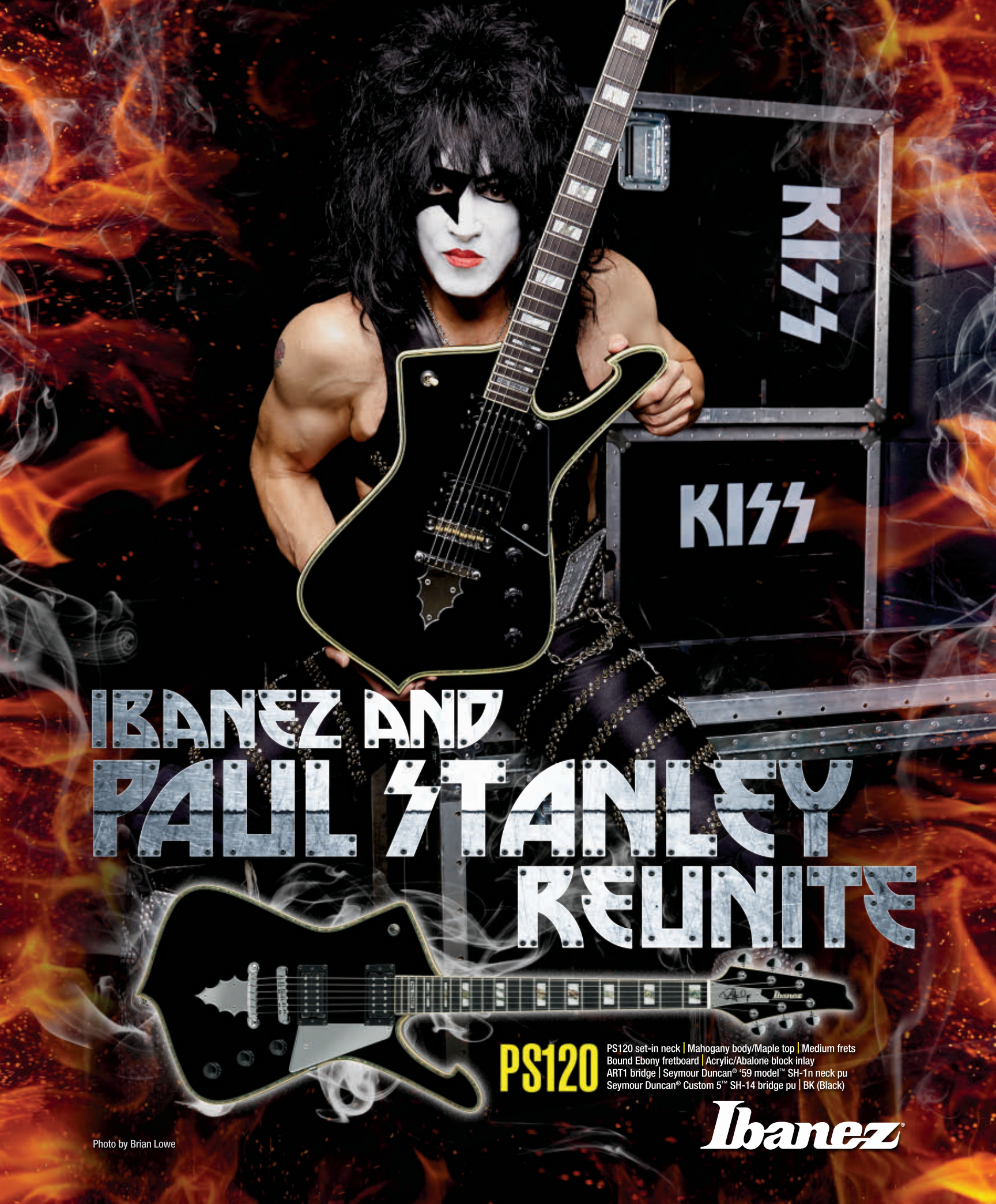
Audio Kitchen The Big Trees preamp
Boss SL-20 Slicer
Ibanez Tube Screamer
Assorted Strymon pedals
ZVEX LoFi Loop Junky

STRINGS & PICKS

Ernie Ball Regular Slinky (.010 –.046)
Dunlop Tortex .88 mm

YOUTUBE IT

Noel Gallagher plays a new song, "Ballad of the Mighty I," and is interviewed on BBC's *The Graham Norton Show.*
YouTube search term: Noel Gallagher Live Ballad of the Mighty I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IBANEZ AND
PAUL STANLEY
REUNITE
PS120
PS120 set-in neck | Mahogany body/Maple top | Medium frets
Bound Ebony fretboard | Acrylic/Abalone block inlay
ART1 bridge | Seymour Duncan® '59 model™ SH-1n neck pu
Seymour Duncan® Custom 5™ SH-14 bridge pu | BK (Black)
Ibanez®
Photo by Brian Lowe

BRUTAL BREAKDOWNS

AWOLNATION's musical architect Aaron Bruno talks about rhythmic progressions, storm trooper SGs, and discovering riffs so good they make him cry.

BY TESSA JEFFERS

Photo by Dave Lichterman

Aaron Bruno's biggest fear is to lose a musical idea. The AWOLNATION frontman often finds himself having twilight battles within his psyche, as his muse often hits at inopportune moments in the middle of the night when he should be sleeping. The problem: Should he get out of bed and record the idea? Or just let it go, get some shut-eye, and hope that another good idea will come around?

Judging by the currently charting single, "Hollow Moon (Bad Wolf)," which was born out of a 4 a.m. moment when a jet-lagged Bruno got inspired watching the sunrise—he should probably get out of bed whenever the music calls to him. Bruno says that song is among his favorites on *Run*, his band's sophomore album. Band is a relative term here, though, because Bruno wrote, performed, and recorded everything on the album with only his engineer, Eric Stenman, by his side.

AWOL's 2011 debut, *Megalithic Symphony*, came about much the same way, with Bruno tracking about 70 percent of the sounds. He wasn't prepared for the level of success reached by "Sail," his first hit. "I never expect anything to top the absolute phenomenon and freak of nature that 'Sail' became," Bruno says. "It's a weird miracle. If anything, it's great to have that as an advertisement for people to check out what I'm all about."

After years of trudging the trenches in punk and hardcore bands—Home Town Hero and Under the Influence of Giants among them—"Sail" has given Bruno the freedom to make his *Megalithic* follow-up the way he wanted. *Run* is a sophisticated collection of 14 songs that swim in contrasts, from Bruno's catchy melodies and pristine falsetto to his savage low-end lines punctuated by a fearless growl and thought-provoking lyrics. Though Bruno is the studio mastermind, AWOL tours as a traditional rock group with Bruno at the helm, Drew Stewart and Kenny Carkeet on guitars, and Isaac Carpenter on drums.

Citing influences as wide-ranging as Radiohead ("*OK Computer* is an example of a psychedelic art record that I'm still blown away by"), NWA, and *The Shape of Punk to Come* by Refused, Bruno says rhythm and groove are what he's about.

The core-shaking low-end on several of *Run*'s tracks is an undeniable force, yet there was no actual bass guitar used on the album. Those parts are actually guitars, and sometimes it's hard to decipher what's happening. "It's a non-traditional use of guitars," says engineer Stenman, "but there are a *ton* of them and they play a huge role on the record."

Though Bruno has been playing guitar since he was in the single digits, bonding with his father over a nylon string and "La Bamba," he maintains he's a "basic level" player. Yet all of his songs start with a guitar and an idea. It's where they end up that's a little more complicated.

Can you recall any musical epiphany or "a-ha moment" where you realized this is what you're supposed to be doing?
The first epic moment would've been jamming with my dad, and him showing me a basic chord progression and getting me to stretch my fingers. That was not only huge musically for me, but also a huge bonding moment with pops.

It wasn't until high school that I decided to record my voice. Once I started writing and recording songs on an old-school 4-track Tascam recorder, I knew it was the best escape for me. It was really just an exercise to get away from everything else that was going on in my life and a way to figure out who I was.

When I added harmonies for the first time, I thought, "That sounds like a real record that a professional would do." I just felt awesome, secretly in my own bedroom. Still to this day, my favorite part of this whole process is the discovery period of a song because you're the only one who has heard it.

Are you serious or laid-back in the studio?
It's very serious when I have an idea that's exciting to me because I'm motivated and it seems urgent and powerful. I become paranoid that I'm going to lose the idea if I don't let it flow through me as soon as possible. But I'm pretty mellow about the whole thing. I'm not a 9-to-5 studio guy. At a certain point my ears can't handle anymore and I don't even know what I'm listening to. That's when my judgment is skewed, so I never overdo it. I find that having a fresh, clear perspective is one of the key ingredients for doing the best work I'm capable of.

Photo by Kari Rowe

You wrote, performed, and produced everything on the new album. Does this come naturally for you?
There's no one to argue with—there's only one cook in the kitchen and that's great ... but it's also pretty terrifying to be alone. You have this body of work, and then at the end of the night you look in the mirror and go, "Is this really good or am I totally full of shit and I can't see it myself?"

There are darker, heavier moments doing it the way I did on this record because of that constant pressure that I put on myself. I think the end result was different and better than I could've done any other way because I was so critical. Other producers, they're going to move on to the next project, but for me, this is everything.

Do you keep musical notes while you're just walking around, living your life, and ideas hit you?
Exactly. It could be anything. It could be the rhythm of the left turn signal in my car combined with another sound I made when my wrist hit the side of the door. Maybe that sounds like a snare drum to me, and then all of a sudden I have this groove that I want to get to. I try my best to at least record voice memos on my phone, like I'm sure every other artist in the world does.

I get anxiety when I don't work on something. I have hundreds, maybe thousands of unfinished ideas that have something I think could be great about them.

"It's pretty much the same guitar Spinal Tap's singer is playing," says Aaron Bruno of his favorite guitar—a custom powder-blue Gibson SG.

Let's talk about the first single, "Hollow Moon (Bad Wolf)." What's the inspiration behind it?
We'd just gotten back from a great European tour. I was jet-lagged and I woke up at 4 a.m. with this weird, hazy, hungover vibe. I watched the sun coming up and wrote this way mellower, ambient version of the song. I didn't even know if it was going to be on the record, it just seemed interesting. I could see the moon at the same time, so that's what I labeled the session—"Hollow Moon." It's something I'd been interested in on a sci-fi level. I took it to the studio with Eric my engineer, where we put the energy into the song, which wasn't intentional.

You've got a mean low-end fuzz going on in a lot of tracks on the album, like at the end of "KOOKSEVERYWHERE." Is that a bass?
I can tell you that I never played any bass guitar on this record. It wasn't intentional, but it's really cool to me and I'm proud of it now. Having said that, there are definitely ways to get bass guitar sounds out of other instruments. That could be a guitar with an octave pedal or a Moog-style synth where you can get that low-end power.

That power of low end is so important to me, it's kind of the heart and soul of the record in a lot of ways. So I don't necessarily have a formula or any rules of how I get it to sound on those specific parts I think you're referring to. I just want it to sound as massive and as brutal as the heaviest metal records, and at the same time as gigantic as any of my favorite hip-hop albums, but—hopefully—with the integrity and credibility of the best-sounding guitar tones that I loved growing up so much.

Did you use a guitar to get those tones?
Yes, of course. But never just one guitar tone. It was a combination of multiple things, so what may sound like just a guitar and some awesome pedal settings is never just that. If we're talking about the low-end breakdown riffs on the record, it's a combination of multiple things to get that power, and guitar is one of those things, but not ever the only thing.

You'd be surprised: Some of the things that clearly seem like a guitar are actually a synth, and some people think I have some sort of synth sound, but it's actually a guitar that sounds like a synth.

Do you use a pedalboard live?
I do. I just have a tuner pedal and a distortion pedal. That's all I need for the songs I've chosen to play onstage. What we do live is completely different.

Is your live band a democracy?
I haven't run into any huge disagreements with Drew [Stewart] and the guitar parts, and he puts his own twist on it. I don't want it to be the same thing live. I want it to be like the record, but on acid. Pick whichever cool drug you like and that's what I want the music to feel like live. Please understand I'm not trying to encourage anyone to do drugs, I'm just saying metaphorically, I want people to walk away thinking, "Wow, I don't even know what just happened to my brain."

You also use acoustic guitar in some special ways. On the last album, your song "Guilty Filthy Soul" has an intro with a really raunchy acoustic riff that sounds like it's doubled. What's going on there?
That was actually only one sound. I recorded that on GarageBand with a nylon-string guitar that just happened to be at the house I was staying at. I don't know what the tuning was still to this day, but I remember having that rhythm in my mind. If my memory serves me correctly I ended on E, so it's like that open-string, no-note nonsense is the first thing you hear going into E, which is not the key we're in when

AARON BRUNO'S GEAR

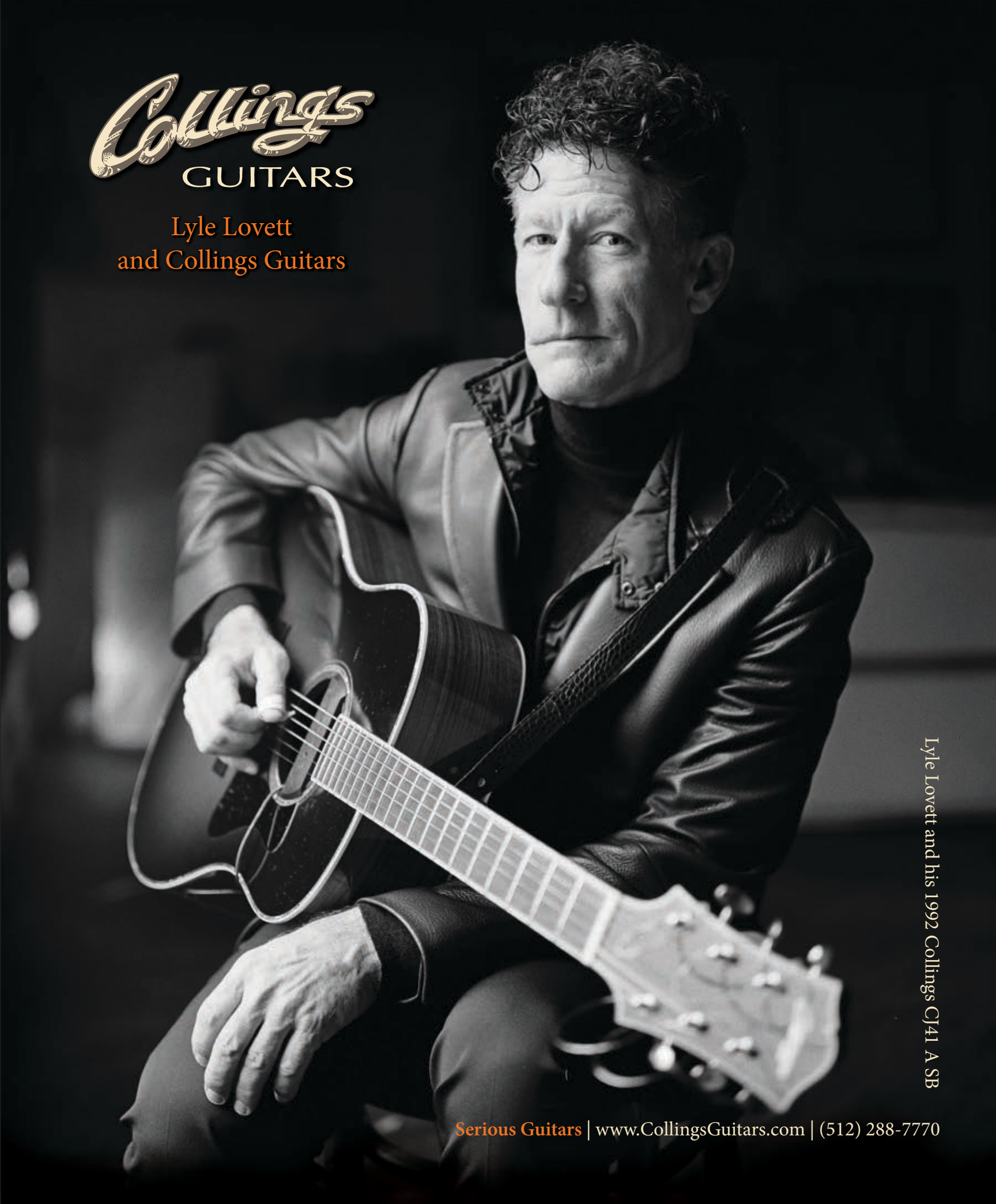
GUITARS
Custom powder blue Gibson SG (live)
1981 Gibson Paul (studio)
Gibson ES-335 (studio)
Gibson goldtop Les Paul (studio, belongs to Eric Stenman)
Nash T72 (studio, belongs to Eric Stenman)
Nylon-string acoustic (model unknown)

AMPS
Dr. Z MAZ 18 Jr.
Vox AC30
Ampeg SVT-VR head with 8x10 bass cabinet
Fender Deluxe Reverb

EFFECTS
DigiTech Whammy(one vintage model, one current model)
Boss MT-2 Metal Zone
Ibanez TS9 Tube Screamer
Malekko B:ASSMASTER
Boss/Roland RE-20 Space Echo

STRINGS & PICKS
Ernie Ball Beefy Slinky (.011–.054) or Dean Markley Blue Steel (.011–.052)
.73 mm picks (unknown brand)

Photo by Amy Lane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Eric the Engineer: Bruno's Right-Hand Man

From field recordings captured on a terminal bus at an airport in Germany to wild bass lines too beastly for their own good, AWOLNATION's new album is brimming with wicked sounds. The only other person who worked on realizing those creations with Aaron Bruno was his engineer, Eric Stenman (Lovedrug, Senses Fail, Weezer), who names AWOL as his favorite musical project to work on. He shares his experience with Premier Guitar.

What was the studio dynamic while making Run?
Aaron is the captain of the ship and I'm the one who's trying to get his ideas through the speakers, just trying to move quickly and keep up with the ideas while they're fresh.

How did this studio experience compare to making the first album?
Every song on the first album he started at home on his simple laptop recording setup and made a skeleton of a song. Then he'd come to me, and we'd build on top of that and replace sounds or add to them. This record started that way and then about halfway through, he started from scratch in the studio. In some ways, he would almost use me as another instrument—it was kind of rapid-fire like, "Okay, give me a hip-hop drum sound ... now let's plug in a guitar that sounds like a dreamy, warm guitar tone ... now let's do a Rhodes piano." He wrote and played every note on this record, and there was a combination of what he brought in to start with, and then a lot of times inspiration would come from whatever instrument he picked up when he walked into the room.

How important were live instruments in the studio?
Aaron writes more on guitar than anything. He has a guitar that his dad gave him, just this old, cheap nylon-string acoustic guitar. He got it redone, set up, cleaned up and back into working order. It made some appearances on the record and was pretty special to him—it was the first instrument he ever owned. It's a piece of crap really, but a cool family heirloom. Any time you hear an acoustic guitar on this record, that's what that was.

AWOLNATION isn't your typical guitar-rock band.
I think what AWOLNATION has done in the past, and even more on this record, is to promote an interesting new use of guitars. A lot of it is layered, without a single bass guitar. A lot of what people may traditionally think is a bass guitar on this record was a pitched-down electric guitar with maybe a synth behind it, or the guitars plugged in the DI spot on a preamp and just cranked. And the level into Pro Tools is slammed, and maybe we dropped it down an octave there. So it's a non-traditional use of guitars, but there is a ton of them and they play a huge part on the record.

From the beginning of the title track, to "Hollow Moon (Bad Wolf)," and "KOOKSEVERYWHERE," the low-end guitar tones really standout on the album. How did you get those tones?
Some of that would be as simple as pitching the guitar down in the computer, just playing it with the pitch shifter dropped an octave. Some of it would be my Whammy pedal with an octave drop on it. And then a lot of it would be, whether it's apparent or not, some sort of synth that's going on along with the rhythm of the guitar. "Run" in particular is one of the Gibson guitars at half speed. Basically, we did the part and it was pitched down to start with, and then also the break section is dropped down—half-time and half-pitch—from there. It was just examining how far we could take a traditionally tuned guitar and then just manipulate the pitch in the recording process.

What type of guitar player is Aaron Bruno?
I would say he's utilitarian. Aaron plays guitar to write songs. He doesn't pick up the guitar as an art form in itself. He's never going to know how to play scales or theory, or how to play an Em7 straight off the bat. Aaron picks up the guitar as part of his toolbox for creating songs. With AWOL it's more than that: There's an aesthetic that comes with the sound and the tonality. He's going to use the guitar to capture a part of a song that's roaming around in his head.

Photo by Jeff Gros

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AWOLNATION's just-released sophomore album, *Run*, debuted at No. 17 on the Billboard 200.

we play the song. That guitar—some piece of shit in the corner—was tuned weirdly. I recorded it with the gain all the way up because it already sounded like hell, so I figured I might as well make it even dirtier. Once we got into the studio I just thought it sounded cool and I wasn't going to get a better tone so we kept it. I'm still shocked to this day that it worked out.

Do you have go-to guitars or do you use whatever is available?

I've always enjoyed SGs. When I was a kid I saw a white SG with a black pickup and it looked like a storm trooper to me and I thought that was really cool [*laughs*]. My cousin was a Gibson rep for a while and he brought an SG over to our house that he let us borrow for three months and I would play it every day. The storm trooper combined with him bringing one over—that was it. I've mostly always played Gibsons. I guess that's just what I know and what's the most comfortable to me.

What guitars did you use in the studio?

I recently got a 1981 Paul, which is the economy version of the Les Paul. There's not a bunch of them out there. It's cool, it's a little bit different. Les Pauls are heavy and hurt my rib cage when I play 'em.

One of the best longboard surfboard shapers in the world is Lance Carson—an iconic pioneer of longboarding and someone I respect very much. He shaped me a board, which I felt honored about and I became buddies with him. In 1982, he gave someone a longboard and the guy couldn't pay him, so he gave Lance this Paul guitar I'm speaking of. I asked Lance if he wanted to sell it and he sold it to me for what I thought was a great price. When I plugged in, it just had this warm feel that I thought was pretty good. That appeared on 80 percent of the guitar moments on *Run*.

What other main guitars do you use?

I got an ES-335 hollowbody in 2001. It was a gift I got myself when we got signed and had an equipment budget. Five years ago I was so broke that I had to sell it. I sold it to a guy I knew with the understanding that I could buy it back someday. I reached out to him and he was a man of his word. He allowed me to buy it back for the same price.

I custom ordered this powder-blue SG that has a matching powder-blue headstock. That's my baby. I threw it once because I thought I was going to be awesome and smash my guitar earlier on in my career, which is a huge mistake, as everybody knows. I was going through a dark time in my life when I realized the band I was in was going absolutely nowhere, so I tried to destroy my guitar out of rage. It didn't break but it got messed up a little bit. I was able to fix it. It goes out of tune quite a bit, but that's my main guitar. I realized it's pretty much the same guitar that the singer of Spinal Tap plays [*laughs*]. And at one point my hair was so long that I would crack up every time I played it thinking, "I kinda look like Spinal Tap right now."

What's it like working in the studio with your engineer, Eric Stenman?

There were a couple of moments along the way where Eric was hard to please. I'm like trust me—mute the snare there and move that riff back one bar and see what happens. He's like, "Are you sure?" and I'd say, "Shut the fuck up. I promise you—if I'm wrong I'll give you everything I have."

And then we'd be listening back and going "Yes!" We're almost crying with laughter because we're so happy that we did something we'd like as music fans, you know? Those are some of the most fun moments in the studio, and no one's around to see it—it's just me and one guy.

So you like to take musical risks.

Oh, absolutely. The reward is so much greater than playing it safe. The climate of music, especially in our world of alternative music, is really interesting right now. It's become extremely poppy, which is fine, there are some great songs out there. But I feel the world is *definitely* ready for a little bit of passion, a little bit of anger, and a vulnerable moment for people to relate to. You can only take so many catchy songs without substance. It doesn't really last.

It's all about rhythm to me. What's always moved me are interesting grooves or setting up a groove so that when the one of the bar starts, it hits you like, "Thank *god*, I didn't know that was coming!" That's what I always love most in music. Those moments that shock my brain. I've studied serious math metal as well, where once a groove locks in after being in all these other chaotic worlds and then comes together, and kind of rolls on the rails for a little moment in time—that's just beauty to me. I'll cry if a riff is that good.

To hear music like yours on the radio is exciting.

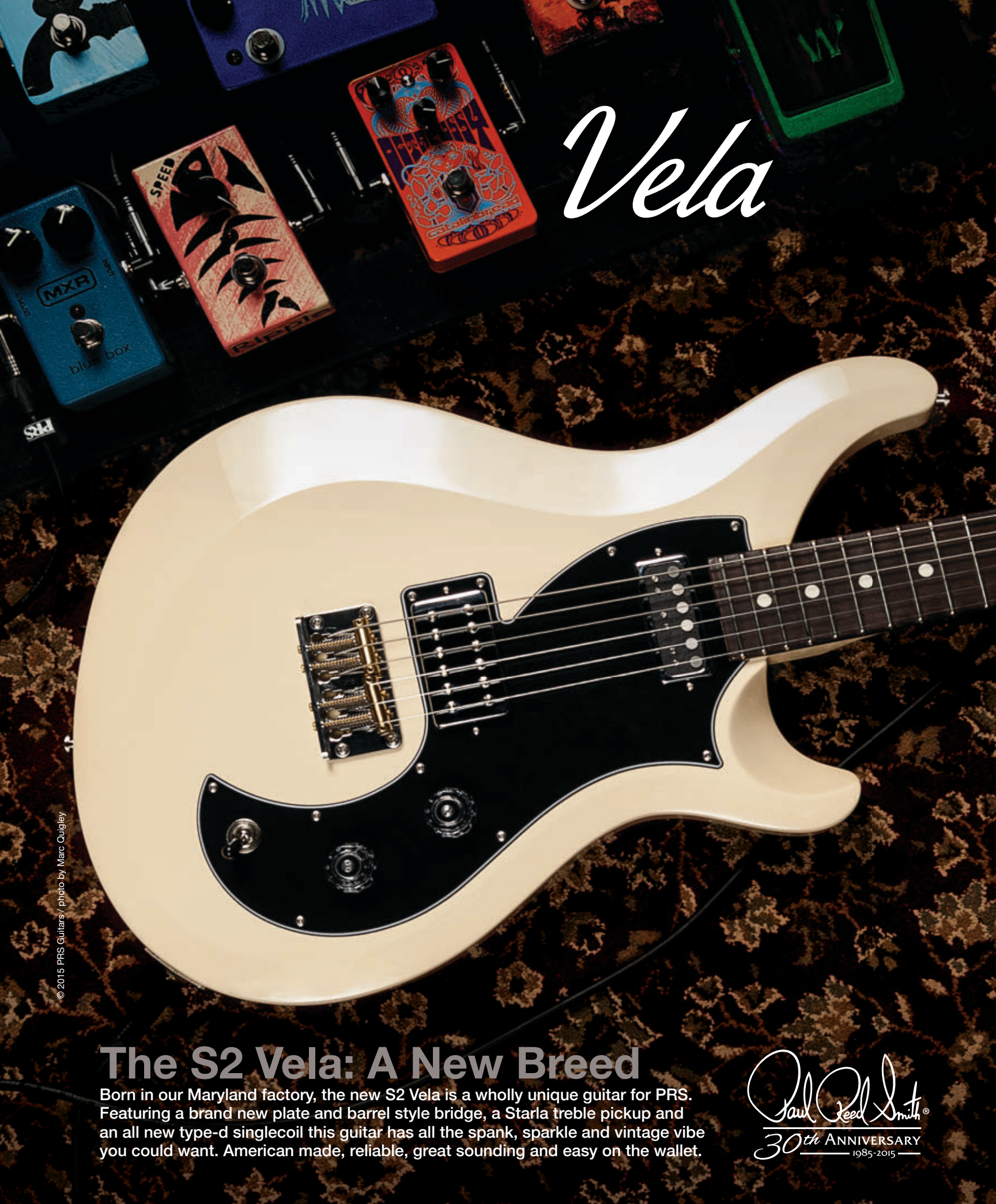
The second I heard "Hollow Moon" got added to all these radio stations, I called up Eric [Stenman] and said, "Hey, if the whole world blows up tomorrow, I'll be really proud that we got into millions of people's ears for 24 hours and that we had that brutal of a fucking riff heard on arguably mainstream radio." It still blows my mind that that's happening. So I thought it was a courageous decision by the label to be cool with going with that first. Because there are definitely songs on the record that I think have a more universal appeal, or an anthemic energy to them that would seem to be what most people would assume to go with. But we've been given the creative freedom to set this up like the fantasy records I grew up loving, which is to start with something energetic and exciting to wake people up a little bit.

If your music had an odor, what would yours smell like?

I suppose it would smell like the ocean, which is constantly changing and could be a lot of different things. In the winter it could be heavy or a kind of mist, and in the summer it could have more of a salty vibe because of the heat.

You mentioned that you struggled earlier in your career. What advice would you give to your younger self, or those trying to find their own voice?

You should figure out what you do best and shine on that. The other thing I would have loved to tell my younger self is: You can always write a better song. The minute you throw the towel in on that—it's over.



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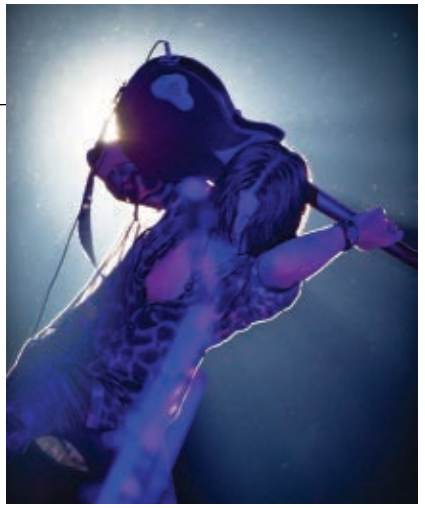
Ego: The Good, the Bad, and the Ugly

BY PETER THORN



Here I am calling on my ego and "playing to the back row" at a 2014 show while on tour in Japan.

I recently read a really interesting blog post titled "25 Things Musicians Need to Stop Doing Right Now," and it's chock-full of great advice. Number nine on the list is "Stop worrying about your ego." Author Guy Perchard states, "The music business is one of the only industries in the world where being an egotistical, self-important exhibitionist is a good thing. It's a world of show-offs, performers, braggers, and promoters. If you *haven't* got an ego, you might be in the wrong place."

This is *partially* sound advice in my opinion. Being an exhibitionist, a show-off, and a promoter is definitely the right move sometimes, but we can't all be rock stars. It's one thing if you are a superstar and have a big, inflated ego that you never tone down. For most of us working musicians, however, trashing dressing rooms and throwing TV sets out of hotel windows would be considered unacceptable behavior.

Controlling and harnessing your ego so it serves you is an important part of being a successful, professional musician. So this month, I'll share some thoughts on developing a *healthy* ego from the perspective of a sideman/studio musician.

The ugly. Let's start by talking about how your ego can hurt you. In past columns, I've addressed the importance of professional musicians being considerate people in tune with their surroundings. It's essential to be adaptable and intuitive in different situations, both social and musical. Onstage, *no one* likes a solo hog or a guitarist that just plays too loud or doesn't listen to the rest of the band. Likewise in the studio, being open to suggestions, ideas, and requests from bandmates, the engineer, and the producer is essential. And when just hanging with the rest of the band, being a good conversationalist and a good listener is incredibly important.

If you're a braggart or an egomaniac, you'll find that others just won't want to work with you, no matter how well you play. Artists that hire musicians for their bands generally just want a few basic things—and this applies from day one! You're being analyzed and scrutinized the moment you walk into an audition, both musically and as a human being. Of course—almost paradoxically—you are also expected to possess extreme confidence in yourself and your skills. When required, you need to be able to step up and "play like a rock star." You've got to be able to balance humility with extreme confidence to be a successful professional musician. It's almost like a Clark Kent/Superman scenario, where you have an alter ego that you can muster up when the situation calls for it.

Speak softly but carry a big stick. I toured Japan last year with the great Tsuyoshi Nagabuchi, and the stage featured a long "ego ramp" jutting straight out off the front of the stage and deep into the audience. On the very first song of our set, there was a dual-harmony guitar solo right after the second chorus. When Tsuyoshi screamed "*Guitar!*" into the mic, my co-guitarist Ichiro and I would jump off the stage, run full-tilt to the end of the ramp (in tall boots no less), and rip a dual-harmony solo playing back-to-back.

It's crazy when you think about it: One minute I'm backstage, and the next I'm not just onstage, but playing a solo while running towards the middle of the arena. It's *impossible* to do something like this without calling on your ego. There's simply no room in that moment to be shy, timid, or understated. There are thousands of people watching, they all paid top dollar for their tickets, and they want a show. "Playing to the back row" is an expression I heard once, and it's fitting.

But when the show is over and it's time to unwind and travel to the next city, you revert back to being polite, considerate, and easygoing. If you're a solid player that can master your alter egos, you'll be a big asset to any touring group.

Be adaptable and amenable. For most of the past few years, I've been touring internationally and working with foreign musicians and artists. This adds an extra level of complexity, since you really have to be aware and respectful of customs and cultures that may be unfamiliar. For example, the Japanese work *very* hard and rarely complain.

Tsuyoshi likes to change things like song arrangements and instrumentation often, and at the drop of a hat mid-tour he might decide to move you from playing lead electric to acoustic guitar on a certain song, and ask the other guitarist to take what was previously your solo. Not taking something like this personally, gracefully complying, and doing your best is a huge part of the gig. Perspective is key: The ugly ego might default to thinking that the artist doesn't appreciate your lead playing, whereas the healthy ego enables you to realize that he just really likes the way you sound and groove when playing acoustic guitar!

I often tend to get philosophical in my column, talking about the psychology and reality of working as a pro guitarist. I feel that when it comes to a career in music, the ideas and concepts I share here are just as important as your gear and practicing the right licks. And developing your Superman/Clark Kent alter ego is essential in order to be successful.

PETER THORN
is an L.A.-based guitarist who has toured with Chris Cornell, Melissa Etheridge, Tsuyoshi Nagabuchi, and many others. He released a solo album, Guitar Nerd, *in 2011. Read more at peterthorn.com.*

Photo by Hiroki Nishioka

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Choosing Backs and Sides

BY MARK DALTON

In my last column ["Grading Tonewoods: Tops," February 2015], I wrote about choosing a top for a custom guitar. Since others and I have previously discussed the tonal qualities that distinguish various wood species, here I focus strictly on structural integrity and cosmetics. Let's assume, then, that you've played a number of guitars made with many of the possible back and sides options, and have settled on a tone that suits your musical needs.

Cosmetics. When it comes to a guitar's back and sides, cosmetics are among the main criteria. When we first pick up a guitar to admire its beauty, we immediately turn it over to look at the back. We do this even when the woods are pretty standard fare, such as Indian rosewood and mahogany, but we're especially inclined to do so when the guitar is constructed from exotic and/or figured wood.

Even after 20 years of doing this for a living, I'm awed by the forces of nature as they relate to a beautifully figured piece of wood. Each piece is different, and its unique nature is what provides the attraction.

While grenadillo can be more prone to cracks than other wood species, it can make for stunning backs and sides.

One thing to decide up front—especially if you intend to use an exotic species such as cocobolo, ziricote, or African blackwood—is whether you like the look of sapwood. Sapwood is the very light-colored part of the wood that usually appears in the center of a guitar's back. Some people find it quite striking, while others don't like the color contrast. Sapwood is usually structurally sound, but not always. It can be pithy and soft, and if that's the case, an experienced luthier will choose not to use it.

We're often asked whether we believe that figuring changes the tone of woods, and the short answer is no.

For some species, the possibility of figuring also comes into play. Figure can consist of uneven or ribbon-like grain lines, medullary rays, or a flame/fiddleback pattern. We're often asked if we believe that figuring changes the tone of woods, and the short answer is no. Having built many guitars side-by-side with and without figuring, I've never heard a difference I could attribute to the presence or lack of figuring.

Structure. Whether or not the back and sides are quartersawn matters much less than it does for the top's wood. In my opinion, it matters little when choosing a back, and usually only matters for the sides when they're initially being bent to shape. (Flatsawn sides are more likely to break while being bent.) If you are unable to tell whether a set of wood is flatsawn, this is a good time to rely on your luthier's experience.

Another thing to consider when choosing the back and sides is the likelihood of cracks occurring down the road, and how much cracks would bother you. Some people see a repaired crack as no big deal, while for others it's the ruination of their dream guitar. For the latter group, I recommend staying away from certain species. Again, this is something to talk to your builder about, but some crack-prone woods that come to mind are ziricote, Honduran rosewood, Brazilian rosewood, and grenadillo.

As a rough generalization, the greater the density of a species, the more likely it is to crack. You can, of course, help avoid cracks by diligently using a humidifier and monitoring humidity in the places where your guitar lives. Ultimately though, cracks can occur despite your best efforts.

Durability. While it's probably not the greatest or most exciting way to choose woods, durability comes into play as a guitar goes through its life. Woods such as mahoganies are softer, and therefore more prone to damage. When we see the guitars of our road-musician customers, the mahogany instruments are likelier to have damaged backs and sides.

I left the durability topic for last, because I think it's the least important when choosing your back and side wood. If you are hooked on mahogany tone, then you should choose a mahogany guitar, take it out there, and play the daylights out of it!

MARK DALTON *is a founding partner of Huss & Dalton Guitar Company. When not building guitars, Mark and his wife, Kimberly, tend to the draft horses and mules that inhabit their farm in the Piedmont region of Virginia.*

Photo by Kimberly Dalton

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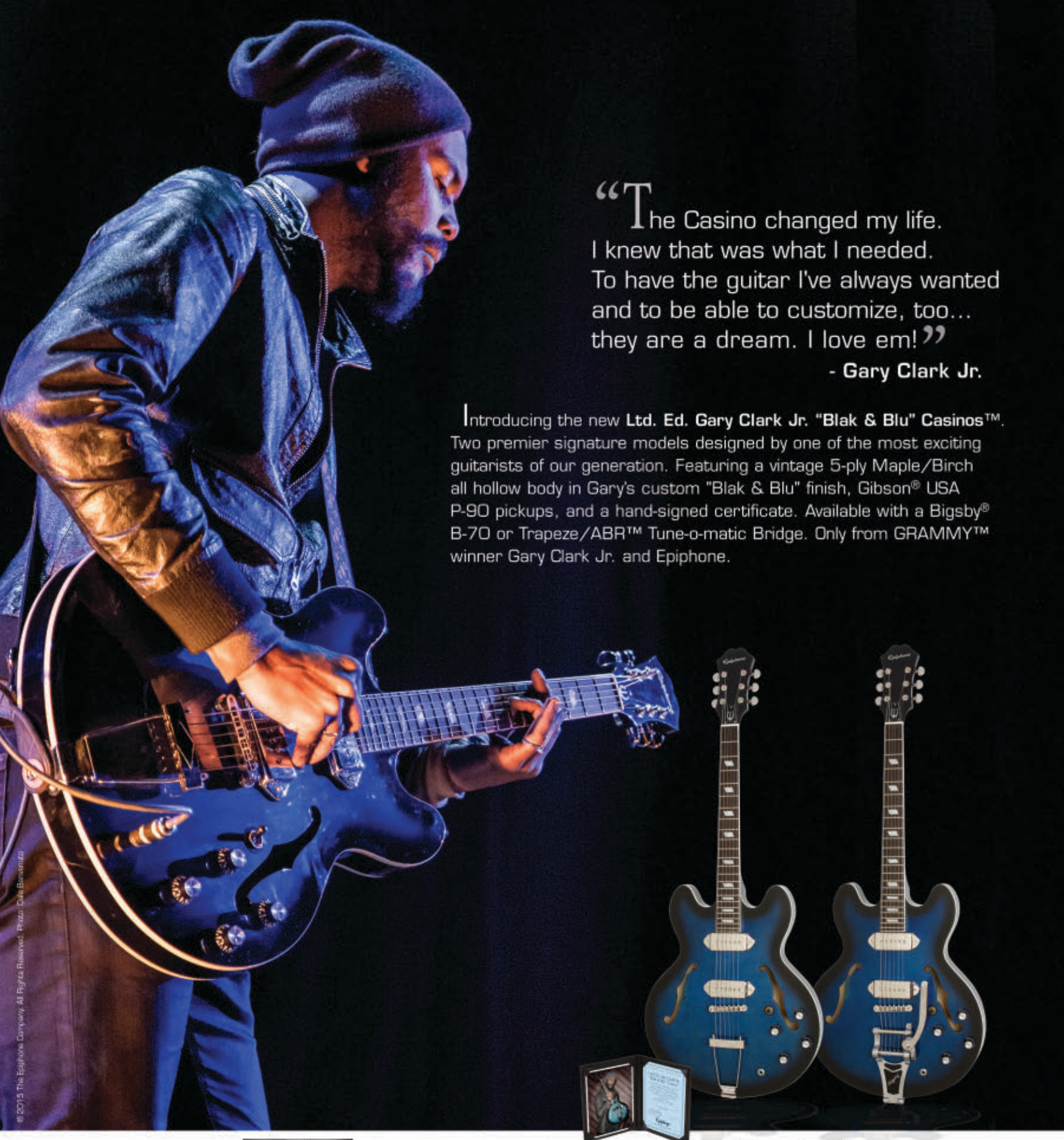

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BACK in the SHOP: Rutherford Returns with Mike + the Mechanics

BY JOE CHARUPAKORN

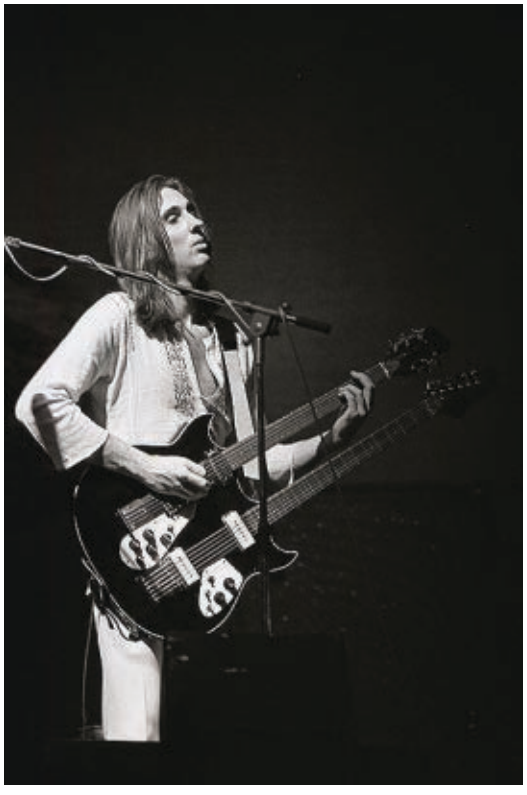
Photo by Robert Juckett

Right: Rutherford flanked by vocal collaborators Tim Howar (left) and Andrew Roachford (right).

Below: Rutherford plays one of his custom 12-string/bass doublenecks at an early-1970s Genesis concert.

Guitarist/bassist Mike Rutherford was a founding member of Genesis, a band that's sold 130 million albums over the course of a career spanning nearly half a century. But for some Rutherford fans, that accomplishment is rivaled by the legacy of "The Living Years," a 1988 song by Rutherford's side project Mike + the Mechanics. It was a tear-jerker mega-hit, a father/son song sad enough to turn a stone-cold bastard into a sobbing mess.

"The Living Years" is back in the spotlight. Rutherford recently uncovered his father's unpublished memoirs and wrote *The Living Years* book, which came out last year. To commemorate the 25th anniversary of the song as well as the 30th anniversary of the band, he's just released *Living Years 25th Anniversary Deluxe Edition*, which features the original studio album plus a bonus disc of live recordings from the 1989 Living Years UK tour. The package also features an updated version of "The Living Years," re-recorded with vocalist Andrew Roachford and the South African Isango Choir.



Sacrilege? Not exactly. "The original was a classic," says Rutherford. "You can't ever do a better version, but you can try to honor the occasion with something a little bit different."

It's been a busy couple of years for Rutherford. Genesis recently released *R-Kive*, a companion to the BBC documentary *Genesis: Together and Apart*. The three-CD set is a retrospective of the band's hits along with highlight from the solo careers of sometime band members Rutherford, Phil Collins, Peter Gabriel, Steve Hackett, and Tony Banks.

Premier Guitar spoke with Rutherford just before the start of the first North American Mike + the Mechanics tour in decades.

What inspired the *Living Years* memoirs?

I found my father's unpublished memoirs about his life in the Royal Navy. It was very well written, and I had a fascination for years about the generational change from my father's era. England was an old-fashioned country with empire days, and our parents came out of two world wars. Then we appeared with our long hair, guitars, music, and probably even drugs—it was a huge left turn. Until the '60s, young men wanted to become their fathers. From the '60s on, they wanted to become anything but their fathers.

The book's release coincides with the release of *Living Years 25th Anniversary Deluxe Edition.*

When you get to my age and the length of my career, everything you do is a celebration of how many years it was!

Beyond the South African choir and Andrew Roachford's vocals, did you also re-record the actual tracks?

Yeah. There's no point doing it like the original version—it has to be different, and it is. The original version was one of those songs where everything came together and kind of worked. This one is less rhythmic and has a different feel.

Which version do you prefer?

Well, the original. It's a classic. You can't ever beat that. I mean, the new one's got a great vocal beat. It's something different, you know? But you can't beat the original.

When Mike + the Mechanics returned in 2010, you introduced a new lineup. How different is it working with vocalists Andrew Roachford and Tim Howar, as opposed to the late Paul Young and Paul Carrack?

Funny enough, not that different. The Mechanics stopped in the early 2000s, though we didn't really announce it. We had one more album in the

Left: Photo by Laurens Van Houten / Frank White Photo Agency

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These days Rutherford's workhorse is a Fender Eric Clapton Strat.

pipeline, but it didn't really feel that great. We felt like it was an end of an era. Then around '08, I had some songs and I thought, "These sound like Mechanics songs. Let's go back to how the first album happened. Let's write some songs, record them, and find someone to sing them." I knew Andrew, and I knew the Mechanics needed to have an R&B voice and a rock voice—two lead singers are always a big plus. So Andrew came down, and it took off.

How are vocal duties split between Andrew and Tim?

It's kind of like it was with Paul Young and Paul Carrack. You know when you write a song who's going to do what. Hardly ever would Paul Young and Paul Carrack go through a conflict about who sang what—it was obvious. There was a song called "Beggar on the Beach of Gold," where they both did a version. But Paul Young's was definitely better.

Some fans might have expected new material for this album and tour.

There was a new album in 2010 called *The Road*, which is quite good actually. It's funny though—it's like I now know who the band is. We've done quite a few shows over the last three years. I've got a bunch of new songs that we're working on. Once you know who the band is, you can write more for the voices.

You've used many tunings in the past. You were also instrumental in the design of the Steinberger M series. Was the Steinberger TransTrem [a tremolo system that allowed for quick, capo-like key changes] part of the toolbox you used for the alternate tunings?

The crazy tunings were done before the Steinberger, and all through Genesis I played with my 6th string tuned down to D. But now that I'm doing more lead, I'm using normal tuning. Occasionally I forget which tuning I'm in.

What is your main axe now?

I have the EC model [Fender Eric Clapton Strat]. The Strat is the easiest sort of workhorse version there is. Funny enough, you mentioned Steinberger. The original small model was so crude, with the graphite body, and the wooden ones never quite did it for me. I'd asked if they could build me one and they said, "No, we don't do that," so I did it myself. I'm working on a new thing now where I've got my old small one out, and I have some very lightweight wood that will just be attached in a couple of places with rubber washers, but the extra wood won't even touch the guitar. Basically, I'm a big, tall guy, and those guitars felt so small. Their sound is quite special, but I want a guitar with a bigger feel. We'll see. I like doing weird stuff with guitars.

Are you still using the bass/12-string doubleneck?

Not on this tour, no, though I brought it out on the last Genesis tour in 2007.

You've had many versions of that instrument.

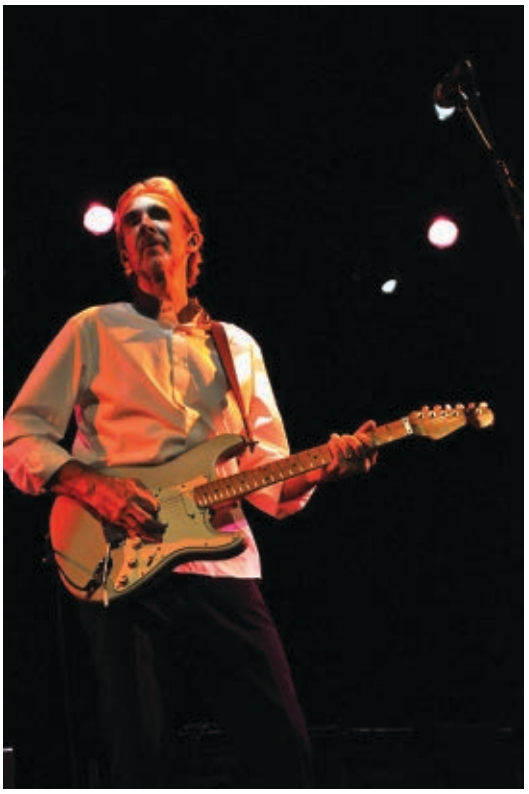
There have been about four versions. For the first version I went into a guitar shop with my 12-string Rick and my Rickenbacker bass and said, "Can you cut that one and that one and join them up?" The guitar maker [Dick Knight] said, "You're not serious, are you?" He wouldn't do it at first, but I said, "Someone's going to do it, so why don't you do it?" Later I got the Shergold. For the last tour I had a Gibson 12-string and a Yamaha bass.

And you mated them?

Yeah. Once again, "Cut that one here and that one there." One thing with all doublenecks is, the balance is rubbish. The neck is going to fall down.

It's heavy, too.

Yeah—tell me about it.



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Tim Howar (left) and Mike Rutherford perform as Mike + the Mechanics at New York City's Best Buy Theater on March 4, 2015.

You played guitar, bass, and bass pedals in Genesis. How does each instrument shape the way you approach music?

I write in the home studio, not the big studio. I've got my guitar plugged into an amp and the roof is blasting out. And I've got my guitar synth playing string pads, and I've got my bass pedals, which are a key part of my writing.

What is your main amp?

The key thing in my rig is an old Fender [Hot Rod] DeVille 4x10. I'm running the guitar and pedals into it. I sometimes run them in stereo, with one amp being the straight sound and the other having delay only.

What about for your bass and the bass pedals?

For bass, I've gone back to Ampeg, the old one with the 4x10. My guitar tech has also done AC/DC's Malcolm Young for years. He keeps some of the gear, and I just borrowed it one day. The thing about the Ampeg is, no matter where it's set, I've got a sound. The settings could be all wrong, and it still sounds the same! The bass pedals go through it, too.

YOUTUBE IT

"Silent Running" was the first track from Mike + the Mechanics' self-titled 1985 debut. Mike Rutherford adds a sweet, melodic solo at the 3:15 mark.

YouTube search term: Mvike + the Mechanics – Silent Running Live

Back in the day you used Echoplexes. What do you use now for delay?

When I write, my guitar goes into Pro Tools, and I use EchoBoy [a SoundToys plug-in].

How about live?

For years I used a Lexicon delay. But I'm trying to avoid having too much in racks. I want things to be smaller and simpler. What's weird is that sometimes the older, cheaper effects sound better. I tend to use Boss pedals.

People always ask about a Genesis reunion. Are you sick of that question?

Of course they ask about it. We had a bit of action last year. We did a documentary for BBC over here, and for Showtime in America. It's a nice story. Most people don't quite know who did what. People ask, "Was Peter Gabriel in the band? Did Phil Collins play drums? Are you in Mike + the Mechanics?" There are no others plans at the moment. But I always say, "Who knows what project is around the corner?"

Photo by Robert Juckett

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WORLD WIDE

10 Till Zen

Feel like your axe is fighting you more than it's helping you? Here are 10 ways to optimize its performance for under $100.

BY TONY NAGY
PHOTOS BY ANDY ELLIS

We all know the feeling: Inspiration strikes and you grab your guitar to explore some cool riff, phrase, or chord progression before it gets away. But instead of nailing the idea, you wind up wrestling with your instrument and getting sidetracked. Maybe the strings feel unexpectedly stiff, or everything sounds a bit sour and out of tune, or an annoying buzz keeps distracting you. The muse slips away and frustration sets in. Bummer.

No one says playing guitar is easy, but the condition of your axe can create additional hurdles that get between you and the music inside trying to get out. Whether you're a beginner or seasoned pro, having your guitar in optimal playing condition is essential if you want to sound your best. No amount of modding is going to transport you to sonic nirvana if the foundation—the essential physical platform—isn't adjusted and tweaked to operate correctly.

With that in mind, let's take a moment to review the key elements that govern how your guitar feels and sounds. As with any piece of sophisticated machinery, various aspects of your guitar will drift out of alignment over time. Seasonal changes in temperature and humidity drive a lot of this, but so do gigging and travel.

Here's the good news: If you understand how the guitar works as a system, you can keep your beloved 6-string in primo working order—and it won't cost you much. Armed with a few simple tools and knowledge of where to invest in hardware or electronic upgrades, you can do a lot to maximize your guitar's sound and playability. And even if you choose to have all the repair, maintenance, or upgrades done by a pro, knowing how to troubleshoot and pinpoint issues when they occur will help you communicate effectively with your local tech.

In this overview, we'll explore playability, tone, intonation, tuning stability, and electronics. We could write a *thick* book about each category—and many authors have—but instead let's examine the 10 most critical actions you can take within these five areas. We'll also point you to related stories on premierguitar.com, in case you want to further investigate a particular subject.

Before we dive in, let's acknowledge that these primary functions and the parts that support them will often have to be adjusted to suit the specific needs of each performer and musical genre. For example, the archtop-wielding jazzbo with stout flatwounds will have different needs than the shredder with ultra-light strings and a locking vibrato. That said, the fundamental physics will always remain the same.

1 Adjust the truss rod. We're listing this first because *neck relief* has to be set before you do any other adjustments that affect the action. Relief is best described as the small concave curvature intentionally left in the fretboard to accommodate the elliptical pattern of a plucked, vibrating string. The best way to measure this is to first tune to pitch and then use the 6th string as a straight edge. With your fretting hand, press and hold the string against the 1st fret. Next, move up the fretboard to the 15th fret—or wherever the neck joins the body—and press the 6th string down against it using your picking-hand thumb. Finally extend your index finger over the fretboard pointing toward the nut and bounce the 6th string against the frets to make the space between the top of the frets and the bottom of the 6th string visible to your naked eye (**Photo 1**).

That space or gap is the amount of relief in your fretboard. Repeat this process with the 1st string to check the relief on the treble side. On guitars, it should be very slight, but present. As an average measurement, figure no more than the thickness of a business card. Different playing styles require different amounts of relief. For example, bluegrass flatpickers or rock rhythm guitarists may require more relief because their hard attack creates larger string movement, while the light touch of a fusion player or folk fingerpicker will require less.

Embedded in the neck, the truss rod is designed to counteract relentless string tension. An adjustable truss rod lets you set the relief by controlling the amount of resistance the neck has to string pull. Some truss rods adjust at the headstock (**Photo 2**), others at the base of the neck. Depending on the guitar manufacturer, the tools for this operation vary. Check out "Demystifying Truss-Rod Tools" on premierguitar.com to see some of these in action.

Whether your guitar requires a small socket wrench, an Allen wrench, flathead screwdriver, or a specialized tool (on some acoustics, for example, you access the truss rod through the soundhole with a right-angle wrench), it's essential that the fit is snug. Don't try to cut corners here—you'll risk damaging the truss rod nut or extension. Your guitar may have

come from the factory with the correct tool, but if not, you can track one down online.

Many guitarists learn how to adjust the truss rods on their guitars. If you feel up to the task, read "Time for a Neck Adjustment?" on our website. But before you attempt this, you'll need to research and understand how your particular instrument functions. Most nuts tighten (straightening the neck to lift the frets toward the strings) to the right as you sight down the neck from wherever the truss rod nut is situated. However, there are a few instruments (mostly electric basses) that work in the opposite direction.

Not everyone is comfortable adjusting the truss rod, and if you're not, just hike on down to your local repairman—every competent tech knows how to do this. On a well-built instrument with a stable neck, you won't have to do this very often.

2 Adjust the action at the bridge. Raising or lowering string height at the bridge is the most fundamental way to affect your instrument's playability. Most electric instruments have an obvious way to do this, perhaps via saddle adjustment screws (as on a Stratocaster) or a pair of thumbwheels (as with a Gibson Tune-o-matic).

So what's the ideal string height? Of course, that's a personal preference, but having a place to start will give you a way to chase down your ideal setup. (Just a reminder: Adjust the string height *after* you've set the neck relief.)

To gauge string height, measure the gap between the bottom of each E string and the top of the 12th fret (**Photo 3**). Take your measurements while fretting each string at the 1st fret to remove the nut from the equation. As a starting point, some well-established norms would be 5/64" on the low E and 3/64" on the high E for electrics, and 6/64" on the low E and 4/64" on the high E for acoustics.

However, there's a catch: Once you get the outside strings at their proper heights, the radius (or curvature) of the strings between them must follow the radius of the fretboard. Matching the string arc to the fretboard is critical for producing clear tones with good sustain, bending strings that don't choke out, and overall fretting comfort. Some bridges may not allow you to control the radius by adjusting individual saddles, but even a "fixed" radius bridge—such as a Tune-o-matic or the one-piece saddle on an acoustic—can be re-radiused if necessary by a skilled luthier or tech.

If you invest in a set of radius gauges, you can measure the string radius yourself. Select a gauge that corresponds to the fretboard radius, and position it underneath the strings (**Photo 4**). The strings should ride along the top of the gauge, following its curvature. If the two arcs don't match, you or your tech will need to adjust the saddles to allow all six strings to touch the tool.

Tip: To test any adjustments in neck relief or action, play the guitar as if you were performing onstage. If you've set up your guitar while playing delicately in your bedroom, those adjustments won't translate when you start digging in onstage.

3 Check the nut. The nut is designed to hold the strings at the proper spacing and height at the end of their vibrating length, and many problems with functionality can originate here. The width and height of each string slot is critical. A slot should be just wide enough to accommodate its respective string, yet not let it shift from side to side. Proper string height is equally important: When pressed against the 3rd fret, each string should just clear the 1st fret. This will keep the strings close to the fretboard for good playability, but also keep the open strings from rattling against the 1st fret when plucked.

The tolerance for proper string slot height is pretty small, so this adjustment starts to venture into "luthier land." Unless you have some experience, the proper tools, and some good instruction, shaping string slots is a job best left to the professionals. However, if you are a critical thinker and good with your hands, both the information and tools are available. Gauged nut slot files are sold by such luthier suppliers as Stewart-MacDonald, and you'll find photos and a tutorial on cutting and shaping a nut in "How to Convert Your Electric Guitar to a Baritone" on our website.

Here's how to tell if your nut is in good shape: In each slot, the vibrating section of the string must begin *precisely* at the side of the nut facing the bridge (**Photo 5**). Back behind that leading edge, the slots should gently angle down to guide the strings across the headstock

toward the tuners. Each slot should be only one or two thousands (.001 or .002) of an inch larger than the string. Each string should rest firmly in the bottom of the slot, but still be able to easily slide forward and backward in its slot when you tune.

If the slots are too tight, the strings may bind. This can cause them to hang in the slot and go sharp when they're flexed by playing. Conversely, a loose slot creates a poor pitch center and unstable tuning. Also, if a slot is improperly angled from the leading edge back toward the headstock, the string may vibrate against the bottom of the slot causing a sitar-like buzz.

4 Upgrade the nut. Often a guitar—especially a budget model—will have a plastic nut. This type of nut can reduce the transmission of string vibration through the instrument or aversely affect tuning stability. It's a good idea to switch to a nut material that offers more density and mass than plastic. This will optimize string vibration, and carry that vibration to the neck and the body. From a sonic standpoint, upgrading to a quality nut is as critical as any other tweak you can make to your instrument.

I prefer bone for most applications. It's strong and dense, but when the slots are polished, they provide a slippery, smooth surface that allows a string to freely travel back and forth and return to pitch after being squeezed or bent. Bone blanks for nuts and acoustic saddles come in various shapes and sizes, and they're inexpensive

Some players like a brass nut, but I'm not a real fan, because although brass is dense, it's not particularly hard. Over time the strings can carve grooves in the nut slot, and wound strings especially can hang in these grooves and cause tuning problems.

Graphite nuts are also popular, mainly with guitarists who use vibrato tailpieces and want slippery nut slots. Although graphite nuts work well in that respect, they don't have a lot of mass and transmit vibration poorly compared to bone. Also, graphite can wear quickly. I've shimmed or replaced many graphite nuts that have been ground or worn too low to be functional.

There are other materials as well. Many vintage instruments were built with mother-of-pearl or ivory nuts. Mother of pearl is hard and dense and functions well, but it's tricky to work with. Ivory has become illegal, so that's not an option.

5 Saddle upgrades and maintenance. As with the nut, maximizing the transmission of vibration at this point is vital to good tone and functionality. Not only should saddles be made of an appropriate material, but they must also be in proper condition for the strings to operate correctly.

Often saddles have some of the problems we just discussed with the nut. For example, wound strings can dig grooves in their saddles over time, or in the case of a Tune-o-matic style bridge, the saddles may be so low that the strings catch on the back of the bridge. In either case, this can cause tuning problems. Ideally the saddle should have a smooth surface, and the point of departure from the saddle shouldn't create any sitar-like vibrations.

Sometimes it's necessary to replace parts. Replacement saddles for both Fender- and Gibson-style electrics are available in either the model's original material or in alternative synthetics such as Tusq and graphite. For acoustics, bone is again my first choice.

6 Check intonation. Your instrument will always sound better when it's in tune with itself. And if your guitar is *not* in tune with itself, it will affect your popularity with your bandmates!

The guitar is based on the 12-tone equal-temperament tuning system, which involves slight, intentional compromises between intervals within an octave. It's important to realize that a fretted guitar will never play perfectly in tune everywhere on the neck. The best you can hope for is to minimize any obvious sourness, so you can get on with the important business of making music.

On electric guitars with individually adjustable saddles, this is a reasonably user-friendly DIY operation that you can do with the right tools. Basically, the goal is to adjust the length of the string so that when the open string is in tune, the fretted notes will also play in tune along the string. Remember, adjusting the intonation happens *after* you've tweaked the neck relief and action at the bridge.

It's a simple procedure: Start by tuning the open 1st string with a high-quality electronic tuner. (Some guitarists tune the string using the 12th harmonic, but unless you play solely with harmonics, I recommend using the open string.) Once the open 1st string is tuned and stable, press and pluck the octave note at the 12th fret. If the tuner reveals this fretted octave is sharper than the open string, you'll need to lengthen the 1st string slightly by moving the saddle back away from the nut. If the fretted note reads flatter than the open string, you'll need to shorten the string by moving the saddle forward toward the nut.

Tip: If you find yourself shifting the saddles very far forward or backward, you may have to touch up your string height at the bridge again.

Repeat this process for each string. To tweak the intonation even further, I'll also fret each string at the 15th and 17th fret and see how it reads on the tuner. If you routinely play up in the higher positions—especially with chord voicings—you may want to fudge the intonation a bit between the fretted octave and these higher frets, so the latter read closer to being in tune.

Because an acoustic guitar lacks individually adjustable saddles, if you're not happy with the intonation your only options are to either buy a pre-compensated replacement saddle, such as made by Graph Tech, or have your existing saddle compensated by a luthier or tech so each string sits on a specific point along the top. Many modern acoustics come with a pre-compensated saddle, made either from synthetic material or bone that has been filed to create individual intonation points.

To learn more about working with bridges and saddles, read "12-String Setup Secrets" and "How to Intonate a Flattop Guitar" on premierguitar.com.

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7 Restring right! You might think I'm getting picky by explaining how to restring a guitar, but every connection between your strings and the guitar affects its sound or performance. By A/B testing various methods for winding the string around the tuner post, I've discovered the most stable method, and it works like this: Turn the post so its hole points directly at the fretboard. Thread the string through the post hole, tugging it gently to make sure you've removed any slack down at the bridge. Then hit reverse, pulling enough slack string back through the post hole to allow an appropriate number of windings. (Depending on post height, I'll typically pull the string back out to the first fret.) Now put a slight bend in the string *in the opposite direction* the string will be winding onto the post.

Put the first wind onto the post *over* the string as it passes through the hole. Feed the subsequent winds *under* that part of the string. At pitch, this "one wind above, the rest below" system locks the string between winds as it passes through the post hole. The strings windings should be tight against each other, so they don't allow any movement or sliding up and down the post (**Photo 6**). Also, you don't want any overlapping strings because that could allow future movement if a winding eventually settles into a new position. Limit your number of windings to those that will touch the post itself.

After the string is secured, gently and evenly stretch it along its entire length. Once a string is under tension and seated in the nut and over the saddle, I like to ensure it's really secure by gently pressing it down at those critical two points where it leaves the nut and saddle to vibrate.

Another alternative: There are excellent locking tuners, such as Sperzels, that crank the string down in the post hole and eliminate windings around the post. Many players, especially those who use whammy bars, rely on locking tuners to improve tuning stability.

8 Explore string gauges and material. This is one of the most significant ways you can control your sound and playability, and fortunately it's not too expensive. I've had countless clients play their guitar for me and say, "Do you hear that buzz? Right *there*." Then I'll play the guitar and it won't buzz. We all have our own touch and different sonic demands, and matching the gauge and type of strings to them goes a long way toward achieving musical satisfaction.

As a general rule, the thicker the string, the fatter the tone. (Did you also know that heavier strings allow you to lower action more? That's because tension at pitch is higher and the string forms a tighter ellipse when vibrating.) Yet Billy Gibbons uses incredibly light strings and there's no mistaking his monstrous tone. So if you haven't already settled on what feels and sounds best to you, why not experiment? Half-round and flatwound strings have a different tone and feel than roundwounds, and until you've actually tried them all, you won't really know if they're right for you.

You can also fine-tune your sound with different string materials. For electric guitars, stainless steel strings sound brighter than pure nickel, with nickel-wound steel strings falling somewhere between the two. For acoustics, phosphor bronze, 80/20 bronze, and other alloys—such as aluminum bronze, brass, or monel—all have a distinctive tone, sustain, and feel. And then, of course, there are coated strings designed to help extend string life.

With strings, it's experiment, experiment, experiment. Start with the strings your favorite guitarists play and go from there. Remember, every note you play begins with the strings, so before you go wild swapping pickups, acquiring yet another pedal or amp, or replacing all your cables, take some time to explore your signal at its source.

9 Dial in pickup height. This is a very subjective area, but if we discuss the basic principles, you'll have a place to start. Generally, moving a pickup closer to the strings will give you more volume, punch, attack, and brightness. But there's a point of diminishing returns. Obviously you don't want to raise a pickup so close to the strings that they hit it and stop vibrating. But you should also be aware that when some pickups (typically single-coils) are adjusted too close to the strings, the pickup magnets will impede string vibration. This can affect the strings' overtones and make your guitar sound out of tune all the time. It's less of a problem with humbuckers, unless they're super-hot models equipped with more powerful magnets than classic PAF-style

'buckers. Low-impedance or active pickups, such as models from EMG or Lace Sensor, can be adjusted closer to the strings as well.

There are other factors to consider: For example, the guitar becomes less dynamic electronically when the pickup sits in close proximity to the strings and produces higher gain. This means your picking will generate a more uniform volume and tone color no matter how you play, compared to a pickup adjusted a bit further away. I know several guitarists—typically humbucker players—who adjust their pickups far away from the strings to allow for greater dynamics. As a rule of thumb, expect more volume, punch, and crispness when the pickups are close, and more dynamics, warmth, and wood when they're farther away.

Also, remember to use the relative pickup height to adjust the balance between the pickups on your guitar, as well as the balance between the treble and bass strings. You don't want to switch to the bridge pickup for a solo and have it either sound wimpy or take everybody's head off. Understand too that wound strings are louder than plain strings, and pickup height needs to be adjusted to make all the strings sound balanced as you play across the fretboard.

As a place to start, first measure the gap between the bottom of each string and the top of the pole piece with a precision metal ruler. Then try setting conventional pickups so the gap is about 3/32" on the 6th string and 2/32" on the 1st string. For low-impedance or active pickups, just make sure they're not hitting the strings when you pick them. After that, it's all up to taste.

For photos and more specs, and advice on how to adjust pickup height, check out three of Dirk Wacker's Mod Garage

columns at premierguitar.com: "Humbucker Height Adjustment," "Adjusting Stratocaster Pickup Height, Pt.1," and "Adjusting Stratocaster Pickup Height, Pt. 2."

10 **Upgrade your electronics.** Many imported and some domestic instruments have budget electronic components. If you have scratchy pots that don't adjust evenly or feel cheap, or switches that work only intermittently, it really behooves you to replace them with quality parts. The output jack, pickup selector, and potentiometers are part of your signal chain and can affect your sound. Such quality brands as Switchcraft, CTS, and DiMarzio can make a noticeable difference both sonically and in terms of performance.

Also, consider having a professional repairman switch out all the cheap, skinny wires that come on so many guitars. Substandard wire can cause signal loss and actually become microphonic if the strands don't rest tightly against one another. When I worked as Warranty Repair Shop Manager at the Gibson Guitar Company, we'd often replace all the smaller 4-conductor wire that might run up to the pickup selector in the upper bout with high-quality wire wrapped with a braided shield. The gauge of the wire was larger, so there was less resistance, and this resulted in a more "full spectrum" sound.

And while we're talking about components, it's a good time to discuss potentiometer value. Pots are variable resistors that take your signal to ground at different levels. A volume control passes more or less of the signal depending on where you set it. A tone control works in a similar way, except it's configured to affect the highs in the signal. The higher the pot's value, the more highs come through, and the lower value, the less highs.

Typically 250k pots are used with single-coil pickups, so their highs don't sound brittle or brash, and 500k pots are used with humbuckers to keep them from sounding too dark or muddy. Other values can be used as well; 300k and 1M ("meg") are the most common alternatives for passive pickups. To hear the sound you want from your pickups, it's essential that you wire them to volume and tone pots with an appropriate value.

Another area to explore is tone capacitor value. Here, the higher the value of the capacitor, the more highs it attenuates and the center frequency adjusts as well. Typically guitars use capacitors with a value of around .022 µf (microfarad) and basses somewhere around .047 µf.

There are many boutique and vintage-style capacitors available that can have a different effect on your sound. If you're interested in investigating this further, start by reading some of Dirk Wacker's Mod Garage columns on our website, such as the four-part "Tone Capacitors for Stratocasters" series. But as you explore online, beware: This is one of the most hotly debated topics in guitar-land and the volume of conflicting opinions can be deafening.

In closing, before you drop big bucks on mods, make sure your guitar's fundamentals are in order. Dialing in the basics will remove barriers between you, your guitar, and the music you yearn to make. And if at all possible, find and befriend a local repairman. Having access to professional consultation and repairs—especially those you can't or *shouldn't* do yourself—will really help you keep your guitar in tip-top shape. Happy playing!

Special thanks to Gruhn Guitars for letting us take photos in their repair department.

MOD SCIENTIST

BY SHAWN HAMMOND

Luthier Tim Thelen's willingness to bastardize a Tele with built-in effects spawned BilT Guitars—and grabbed the attention of adventurous players like Brent Hinds, Nels Cline, and Buzz Osborne.

In 2008 Brandon Darner couldn't have known the mods he commissioned for his new Fender Telecaster Deluxe would spur the formation of one of the Midwest's hottest new guitar companies. Just as he probably never imagined his Des Moines-based band, the Envy Corps, would later get a delicious sammich named in its honor at the local Zombie Burger + Drink Lab, a joint whose unique culinary tributes to classic undead flicks have been featured on several television shows. Both unforeseen consequences testify to the power of being a bit twisted in a place that's really *not* known for that.

Just what were these mods—and who did Darner trust to carve up his guitar? He wanted a Sustainiac neck pickup, and two pedals—a Red Witch Fuzz God II and an MXR Carbon Copy delay—installed in his Tele. Tim Thelen, who'd already made a go of it as a luthier of boutique Strat-, Tele-, and Les Paul-style guitars, was the chosen luthier. (The burger? A grade-A ground-beef patty with pulled pork, ham, pepper jack cheese, salsa, fried jalapeños, red onion, and chipotle mayo.)

"I'd been going to Tim's repair shop for several years at that point," says Darner, who's produced albums for Imagine Dragons, Radio Moscow, and more. "The Tele started off as just an average Deluxe. I bought it from Pro Music in Des Moines and took it straight over to Tim to paint it." Darner broke two tuners throwing the guitar at its first U.K. gig, so it was out of commission for the rest of the 40-date tour. During the interim, his younger brother's old Electra Modular Powered Circuits (MPC) guitar gave him the idea of installing effects in the Tele.

Thelen was initially skeptical. "It took him a couple months of trying to convince me, but he was persistent," he recalls. The Tele—since dubbed "the Monster"—has big routed-out cavities where the entire Red Witch and MXR enclosures were dropped in before being covered by two custom pickguards. It also has a Jazzmaster vibrato and Mastery bridge. "It was pretty basic, pretty rough," says Thelen. "It was super glitchy with the sustainer and all the stuff going on with those three effects—the Fuzz God is just *insanity*. But I got all the bugs worked out, and it was really pretty cool."

Darner thought it was more than "pretty cool." He insisted Thelen build more guitars with built-in effects.

The builder laughs as he remembers Darner's optimistic prediction that people would "really want them." "I was, like, 'Well, no—*nobody* really wants this.'" But a few domino crashes later, BilT Guitars was born as a partnership between Thelen, longtime repair cohort Bill Henss, and Darner. Today, players such as Nels Cline, Mastodon's Brent Hinds, the Melvins' Buzz Osborne, Limp Bizkit's Wes Borland, Imagine Dragons' Wayne Sermon, and the Killers' Dave Keuning use the BilT Relevator—the production model that evolved from Darner's outlandish request. Here we talk to Thelen about the metamorphosis from one-off Tele bastard to offset mayhem machine.

Opposite: BilT Guitars luthiers Bill Henss (left) and Tim Thelen.

Above: Brandon Darner from Des Moines-based band the Envy Corps had Thelen install fuzz and delay in this Tele Deluxe, thus setting in motion events that would lead to BilT's formation.

Why you were initially reluctant to take on Brandon's Tele project?

Well, you've seen what's available with effects built in. It's that cheapie Danelectro [the 2001 Danoblaster Innuendo and Hearsay guitars and Rumor bass], or the Electra with the cartridges. There isn't a big, reputable gallery of popular—or even usable—instruments with effects built into them. The other side of the coin was that I had resigned myself to repairs. I was no longer interested in building guitars. I'd tried a lot of different things a lot of different ways, and I just kind of gave up. I realized the world didn't need another Tele, Strat, Les Paul,

The Relevator's assembled bass-bout control plate.

Hand-drawn Relevator effect-circuit diagrams.

BilT Guitars happily shared its onboard-effects expertise with us, but they are unable to offer one-on-one advice. Please respect their time, and if you have questions about your own project, consult a local tech with the necessary skills outlined in the Q&A portion of this article.

or dreadnought copy. Then this came along, and it was pretty cool. It got a lot of attention locally.

What were the biggest surprises of that first project?
When we took the pedals apart, I was nervous that I was going to ruin this stuff. So I mapped everything out, hand-drawing schematics of the controls and how everything related on the circuit board. I came at it from the point of, "This is going to be kind of weird and dumb, so I've got to be able to put everything back in the pedal." And the Sustainiac has its own quirks and weirdness as far as proximity and how glitchy it can be with crosstalking, the wiring, the circuit board. That was probably the second or third one I had ever installed, so I knew a little bit about it. But man, you start introducing all this extra stuff and you realize, "Oh, wow, if I touch *this* wire, it gets crazy. Shield *that* one, and all of a sudden every wire in the guitar is shielded." It was extremely frustrating, standing at a bench all day chasing weird little noises.

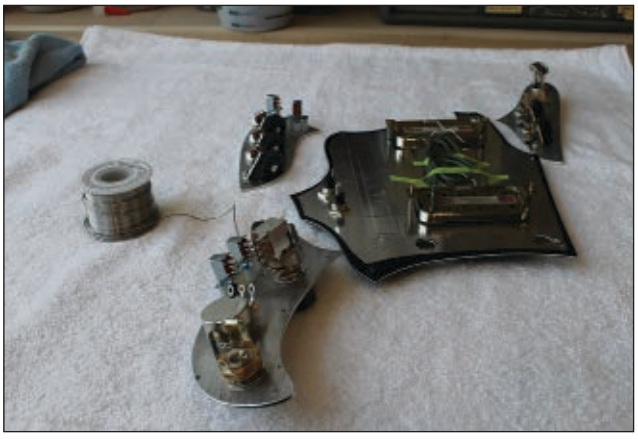
So what happened after that Tele project?
We hired a couple of guys to help with the guitar side of things. One of them turned out to be Bill Henss. As he and I went along, we ended up collaborating on a guitar [a rosewood Jazzmaster-style model] for a client I'd had as a friend since the '90s: Nels Cline. We approached him about making the Jazzmaster and he thought it was a great idea. So we had this distinct customer telling us this thing could really work. It's not going to burn the world down, but there are people out there who would dig it. Then I stumbled across a picture of a Fender Marauder that I think is currently in Dave Rogers' collection [at Dave's Guitar Shop in La Crosse, Wisconsin].

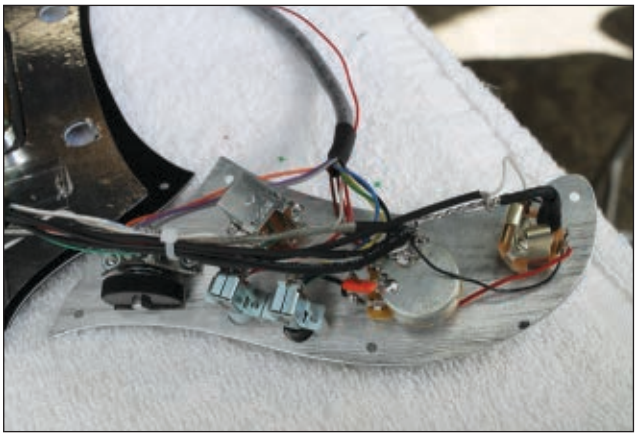
We did a video tour of Dave's shop a couple of years ago, and at the end we show that same Marauder.
Fender prototyped, like, eight of them and [the model] made it into the '66 color catalog but was never produced. The one at Dave's has three enormous plates, a ton of switches, a really cool offset body shape, a tremolo, the Starcaster headstock. The thing offered us something that wasn't going to be in direct competition with Fender. It had everything, but especially the right amount of real estate on those plates for effects controls. I saw that and it just gelled. We studied the Marauder and ended up prototyping our first Relevator. That became our flagship—the only model we were offering. We started by doing a run of 10.

What were the trickiest parts of getting the Relevator on its feet?
We've gone through different phases for how we power the effects. We initially used batteries, but we soon we realized that wasn't an option, considering how quickly the delay eats batteries. We decided to build our own power supply, and we had a guy design a circuit for us. The thing was bulletproof, but it was *ginormous*. Today, instead of building our own power supplies, we provide a box that you plug a 1 Spot into, and then you go mono cable to the amp and tip-ring-sleeve (TRS) stereo cable to the guitar. You can switch the power on and off as needed.

Did those old Electra and Danelectro guitars teach you how *not* to do anything?
Mostly we were interested in how they did the surface controls. The overriding part was, "Okay, these are going to be awesome to have at your fingertips—you won't be bent over anymore." The two effects that dudes were bending over to play around with were of course delay—to make everything go crazy when you mess with the rate and repeats—and fuzz, or some way to make something oscillate. We're not trying to take away a pedalboard. We're not trying to eliminate stuff. We're trying to *add*.

Tell us a little more about the Relevator's fuzz circuit.
It's along the same lines as a ZVEX Fuzz Factory, but so is every other fuzz. We played around with the ZVEX, but we didn't copy


The Relevator's pickguard and control plates, assembled and ready for wiring.


The wired lower control plate.

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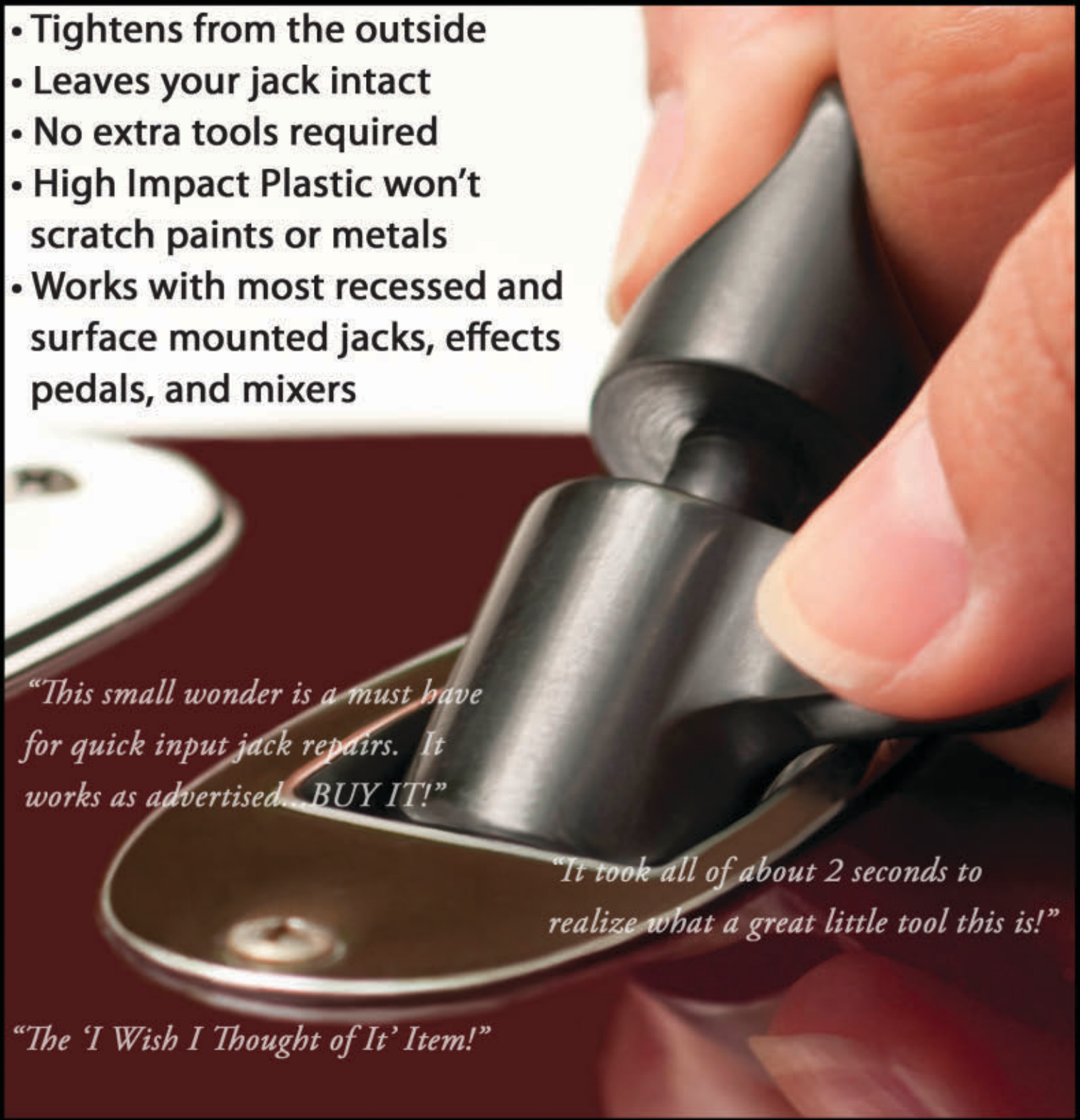

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the schematic exactly. We added our own components. We put a tone adjustment on there, a voltage sag, and a bunch of other stuff.

Is that how you do it with most effects? Unless someone says they want an exact pedal in the guitar, you make your own circuits?
No. We take the pedal apart and we put the actual circuit board in the guitar. For the delay, we buy a Carbon Copy and take it apart. For the fuzz—since it's just a simple circuit—we had our boards printed for that. We populate them ourselves.

So you aren't moving components to new boards that fit the cavity better?
No. It's the same circuit board. We cut off the potentiometers and LED lamps, pull off the footswitch, and then re-route the connectors to the face of the guitar. We either buy the effect, or you send it to us. That's why I talked about mapping it out. You take the pedal and draw a picture of what it is. You have to consider what's upside down, what's right-side up, how the potentiometer will be when this thing is mounted on the back of the guitar and the knob is on the surface—that kind of thing. You need a reference point before you start removing components.

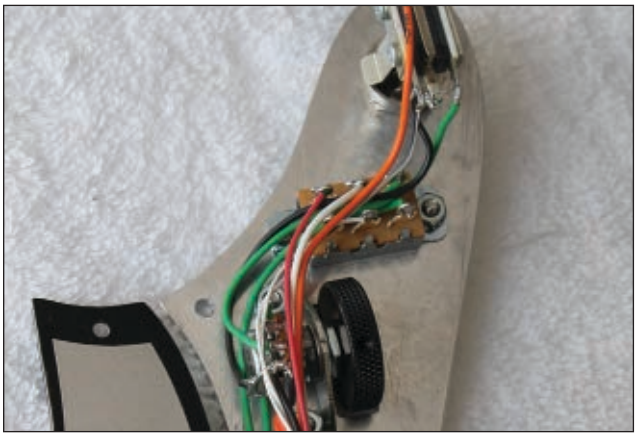
Do you have to worry about proximity to other components or do special shielding?
Yeah. Those are things you sometimes only find out after everything is back together, and you have a weird whistle or hum or something. The effect controls are coming out of an enclosed metal box, so we try to recreate that as much as possible with shielding paint and shielding on cavity covers, but there are limitations. We end up having to use shielded wire for many connections. The delay is one of the worst—it's a big-time crosstalker. I had to source very specific wire to get all the components right. Ground loops can make people insane. You get weirdness going on, especially if you're playing at high volume.

Other than not having to bend down to mess with knobs, what are the advantages of having effects in your guitar?
If you're going to manipulate a pedal, you're going to have a lot better muscle memory with your hand and fingers than the side of your foot on a knob. We will not put an effect into a guitar if it's just an effect that you set and turn on and off, like a distortion or boost. It has to take away something that's kind of a pain in the ass.

That different form factor can change the way you play and inspire you to do things you might not have done otherwise.
Absolutely. Our hope is that people develop a way to do something that can only be done with our guitar. But guitar players are a very conservative bunch, no matter how avant-garde they think they are. It *has* to be a Strat, a Tele, or a Les Paul. That's what everybody hears, that's what everybody *wants* to hear, and that's what everybody's used to. We're basically trying to ease it into the sphere of acceptable items to have on a guitar. We weren't trying to be gimmicky. First and foremost, we designed the Relevator to be comfortable as a guitar itself. We stay within conventional scale lengths, neck dimensions, body dimensions, body weights, and hardware.

Besides the lack of footswitchability, what are the drawbacks?
Accidentally engaging them or having a technical flaw. I think the major drawback would be feeling intimidated until you're totally down with it—getting confused by all the things you're looking at.

How do you minimize the likelihood of accidentally engaging an effect? Are there certain types of switches or knobs?
The biggest thing is having a way to visually tell whether something's on, and also a tactile way. The on-off buttons on



The Relevator's wired bass-bout control plate with 3-way pickup selector and Jazzmaster-style rhythm-circuit slider.

The upper treble-side control plate and MXR Carbon Copy delay pedal before disassembly.

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our guitars are like footswitches—a push-push situation. When you push it and it comes up, the effect is on. We made it so that the top of the button is very, very close to the surface. It's not something that a pick should actuate unless you're right on top of it. Do you remember the Fender Elite Stratocaster from the '80s?

Yeah.
Instead of a slider switch, it had three pushbuttons. We found that switch. We have bins and bins of graveyard parts. We tracked it down and got some more after we decided that it was the one we wanted to use. It was hard to get buttons for them, so we ended up having to make our own. That kind of freed us up, because then we could do whatever color we wanted. The pushbuttons and how we mount them are substantially different from the way Fender did it, but it has worked out really well. It's just a little double-pull, double-throw switch. They've been super reliable—I don't think we've had *one* go bad.

Which switches do you recommend for players who want to install effect on their own guitars?
The easiest way is probably either a push-pull or a push-push potentiometer switch, like a double-pole, double-throw [DPDT], coil-tap-type switch. Most guitar effects use those same basic components. The footswitch is often DPDT, and you can use the same configuration on your push-pull or push-push pot. We've come to like the push-push ones, because instead of having to grip and pull up, you just tap it and it pops up—it's fast.

Have you ever shoved a Relevator into a skeptic's hands and said, "Just try it"?
Oh yeah. It's pretty amazing how quickly it becomes intuitive. It can be as complicated as you want to make it, or as simple as you want to make it. Our thought was that we'd get it to the people who could legitimize it for us rather than just trying to sell it. We'd much rather make it about people playing it than about us telling you how awesome it is. From that perspective, we've been willing to wait it out. I think it's served us well, especially as an attention-getter, because it's going to create a response in your average player upon first sight. When we first launched it, I had to develop some thick skin pretty quick.

What's the most common reaction when someone plays a guitar with built-in effects for the first time?
It's kind of a cross between delight and sheer panic. It's fun to watch people disappear into that focused zone once they start to feel a bit of confidence with what everything does. Once they get over the panic, they dive into that "I need to understand this" mode. That brings me back to another point: We wanted to make the guitar completely transparent. We wanted a guitar that plays good, sits well, hangs on your body right, and is comfortable, so that it basically fades out. We wanted to use high-quality components and pickups as well. As far as we're concerned, the pickups are the heart and soul of your tone. Once we address all those variables, the only thing left is technique. What wanted to make sure that if there's a problem, it's you—not the guitar.

How much does all that routing affect the guitar's resonance and sustain?
I don't think it really hurts anything. We put everything in the Relevator's back cavity, which is roughly the same size as a tremolo cavity. It's not massively out of the ordinary, like the big trapdoor on the Electras or like a Moog guitar. We wanted to keep it as traditional-looking as possible so that people would accept it. That said, we went with something that people had never seen before. Only the nerdiest of nerds knew what a Marauder was, although that's changed now.

A desoldering tool is best for removing larger components like the footswitch, but wire clippers prevent damage to fragile items like the modulation switch and delay pots.

Removing the footswitch with a desoldering tool.

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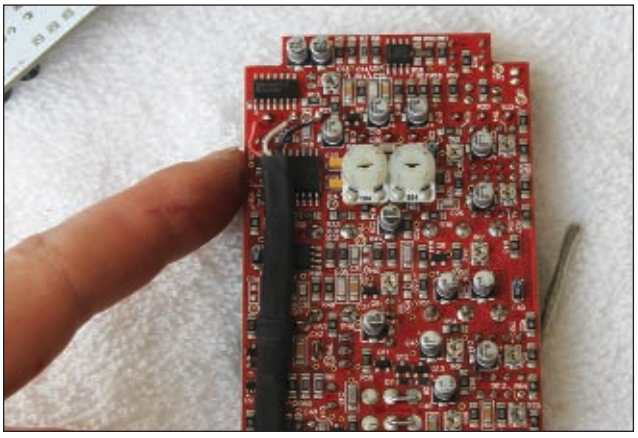
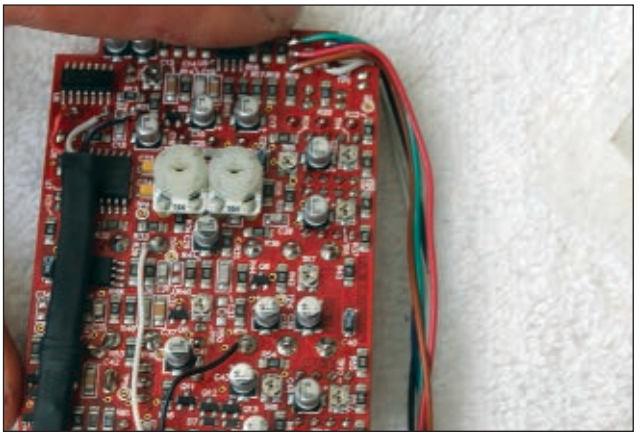
How much DIY building experience is necessary for someone who wants to put a circuit or two in their guitar?
If you can route a pickup cavity or install complicated hardware, that's one set of skills. If you understand how the basic electronic components of a guitar work—like potentiometers and switches—and you can draw a wiring diagram of a guitar and how the controls work off the face of an effect circuit board, then you can give it a shot.

Any suggestions for players who don't have access to a router?
Find a good shop and be persistent. You just have to find somebody who can do all those things for you. I certainly don't count myself among electronics experts. I don't spend a lot of time understanding the values of all the components that go into any given effect, but I basically know how everything works.

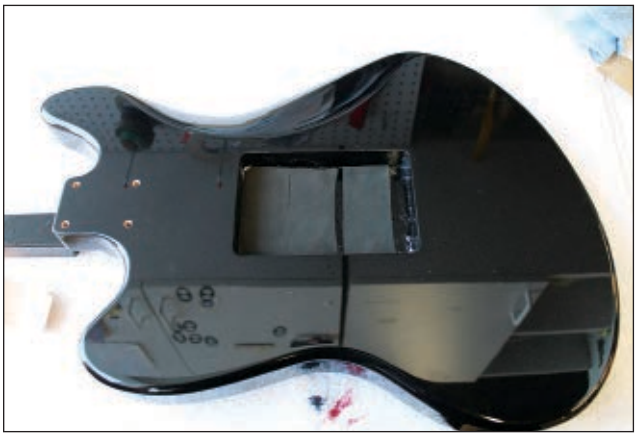
How much should someone expect to pay to put an effect or two in a guitar?
It's not going to be a hundred bucks. You'll either get a ruined guitar or $100 worth of nothing. Be prepared to hit at least the $400 to $500 range. When we have people request a new, different effect, we immediately throw in a $400 charge plus the cost of the effect, because of the time needed for layout and making sure everything goes right. Usually we don't make any money off of that charge.



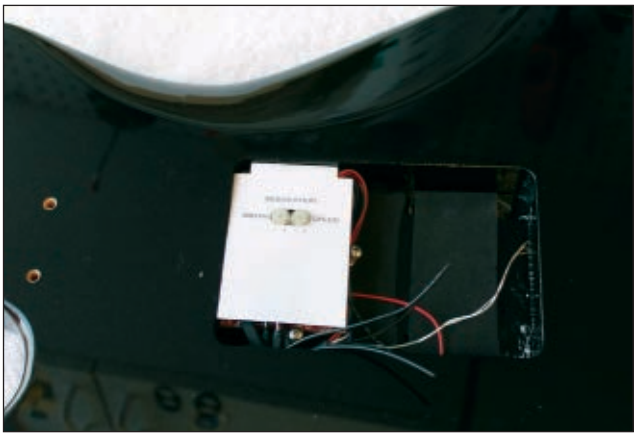
Wiring a harness that will reach the delay's rate control on the face of the guitar. Each wire needs to be individually shielded to prevent crosstalk noise.



This shielded, six-wire cable connects to the modulation switch. (The black and white shielded wires near the middle of the circuit board are for the on/off switch on the control plate.)



A rear cavity in the back of the guitar is lined with a thin layer of neoprene that acts as a protective bed for the circuit boards.



The delay circuit board nested in back, with the harness fed through to the front of the guitar.

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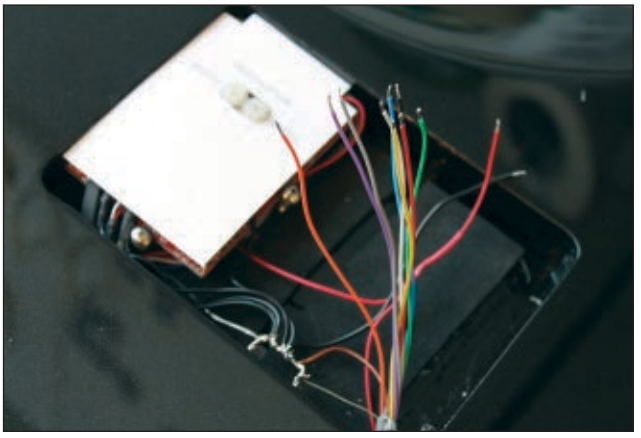
And how long should they expect it to take if they do it themselves?
That's a tough one. With all the research, drawing everything out, laying out how you want things done, ordering the parts, taking it all apart when it doesn't work, putting it all back together, and taking it all back apart when only one thing works … I would plan to put a good 20 or 25 hours into it.

You didn't say "if" it doesn't work….
Yeah, *when* you have to take it apart. I'm on a lucky streak right now. I'll probably regret saying this, but it's been a long time since a Relevator has not worked the first time, though at this point it's a rote, repetitive experience.

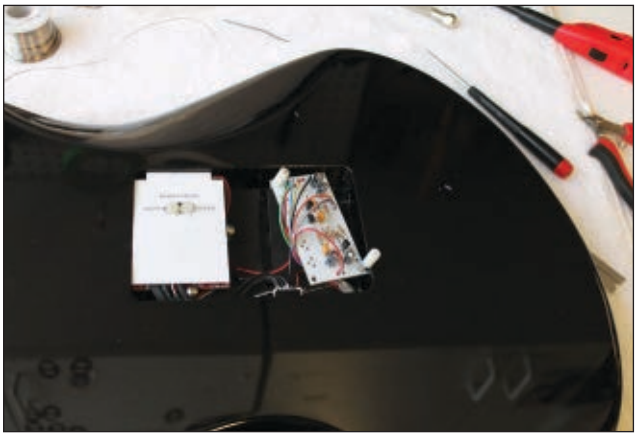
What's the most common reason something doesn't work?
I might put a component in backwards on the fuzz, or wire an in to an out, or a solder joint might come loose. There are *lots* of solder joints in a Relevator.

Do you think the average local repair guy could pull this off?
If someone can route and install a Floyd Rose tremolo, they probably have enough skill to map out and route a cavity that would allow a circuit to be installed. If they can make custom pickguards, that's another indicator. Or if they can install a humbucker in a standard Telecaster neck position. Those are ways to tell whether there's a little bit more going on than just setups and clamping broken headstocks.

A ground bus (the rectangle of twisted wire) screwed into shielding paint in the rear cavity allows us to tie all shielded wires and circuit grounds to one spot, and then to ground on the input jack.



The various leads from the fuzz circuit's harness are stripped, tinned, and ready to wire to the board.



Fuzz leads are connected and the board is ready to be flipped over and screwed to the cavity.

The fuzz circuit after being secured with screws.

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In Search of Ancient Ambience

STORY AND PHOTOS BY JOE GORE

When I was a kid, I wanted to be an archeologist—until the day I shared the dream with my mom.

"Why would you want to do *that*?" she cried. "You'd just spend your life in some dingy closet, polishing pottery scraps with a toothbrush!"

Fortunately, mom was more supportive of my guitar fantasies—in fact, she taught me to play. By the time I'd mastered the fiendish F chord, my archeology dreams had faded, along with my hopes of receiving a mini-bike as a bar mitzvah present. (I got a Jazzmaster instead.) Yet I've always maintained an armchair interest in ancient civilizations. My wife and I were even planning an archeology-oriented trip to Syria a couple of years ago, but, um, some stuff happened in that corner of the world, and the trip got nixed.

But living in the American West, we have archeological riches closer to home, particularly the remnants of the great Ancestral Puebloan civilizations (often referred to as the Anasazi, Navajo for "ancient ones"). About 1,000 years ago, these ancestors of the modern Pueblo people created the lofty cliff dwellings and grand cities whose ruins dot Arizona, New Mexico, Utah, and Colorado, including the vast complex at Chaco Canyon. I recently had a chance to revisit a favorite site, Wupatki, about an hour north of Flagstaff. And this time, I had music on my mind.

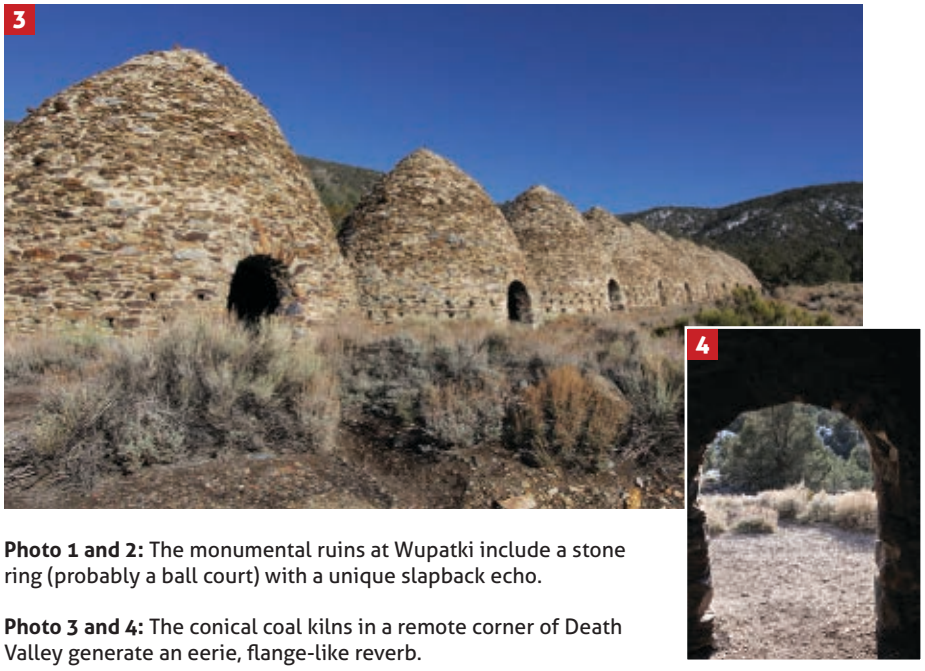

Photo 1 and 2: The monumental ruins at Wupatki include a stone ring (probably a ball court) with a unique slapback echo.

Photo 3 and 4: The conical coal kilns in a remote corner of Death Valley generate an eerie, flange-like reverb.

Sinagua Slapback

Wupatki boasts glorious sandstone ruins, the largest of which were created by the Sinagua people during the 12th century (**Photo 1**). The site includes a large stone ring (**Photo 2**) widely believed to be a ball court like the ones associated with the Maya and other Mesoamerican cultures. (It's the northernmost example of its kind.) A growing body of evidence hints at cultural exchange between the ancient Puebloans and Central America. (My take: "How could there *not* have been?")

When I first visited Wupatki 25 years ago, I noticed a uniquely eerie echo when standing within the stone ring—a series of short but perceptible slaps as sound waves ricocheted between the low stone walls. Back then we lacked the technology to digitally capture the effect, but this time I packed a mobile interface with the aim of snaring an audio snapshot so I could clone the sound in the studio using an impulse response reverb. (I discuss this technology in my April 2014 Recording Guitarist column.) I squatted in the mud and clapped. The echo was every bit as spooky-cool as remembered. I unzipped my bag—and

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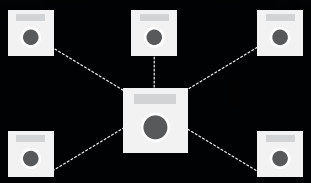

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Photo 5: Impulse-response reverbs (such as Apple's Space Designer, seen here) let you clone ambient spaces using clips of percussive sounds recorded in the target location.

realized I'd left the interface at my hotel, two hours south in Sedona. (I wonder whether the Ancestral Puebloans had a word for "D'oh!")

So I just set my iPhone on a rock in a puddle, fired up iOS's free Voice Memos app, and started clapping, as heard in **Audio Clip 1**. The results as captured through the phone's cheapo built-in mic aren't promising. The echoes don't sound terribly dramatic, and there's wind noise, plus my scuffling feet and heavy breathing. Time would tell if I got anything good.

D'oh! Redux

History repeated itself a few days later as I returned home via Death Valley. I'd driven to a remote mountainous corner of the park to check out the Wildrose Coal Kilns (**Photo 3**). Designed by Swiss engineers and built by Chinese laborers, these spooky-beautiful conical structures were used in charcoal production during the 1870s.

It was "D'oh!" déjà vu: Again, I was unarmed—it didn't even occur to me till I was standing inside one of the kilns (**Photo 4**) that these stones cones generate bizarre and capture-worthy reverb. I set down my phone and clapped, stomped, and clacked rocks, as heard in **Clip 2**. The echoes were shorter than at Wupatki, but they regenerated longer, producing an almost flange-like resonance.

Studio Surgery

Back home in my San Francisco studio, I hacked away at these lo-fi recordings. I filtered out background noise using iZotope's RX4 audio repair software, my first experience with the product. Holy crap, it worked great! Compare Clip 2 to **Clip 3**, the same with RX4 processing. Next I snipped the file, isolating some of the better-sounding hits. (The isolated clips run from the initial percussive attack through the last audible echo.)

Next, I just dropped these short recordings into Space Designer, the impulse-response reverb plug-in included with Apple's Logic Pro, saving the results as presets (**Photo 5**). (The procedure is similar for all IR reverb plug-ins, including Audio Ease's Altiverb, Waves' IR-1, Avid's TLSpace, and shareware products like LiquidSonics' Reverberate and SIR1 from SIR Audio Tools.)

The results, while better than anticipated, weren't dramatic enough, so I ran the short clips through a slow-attack compressor, maintaining the initial impact while fattening the tails of each sound. Hear the result in **Clip 4**, where I play a classical guitar (low-tuned and strung with absurdly expensive Thomastik-Infeld "rope core" strings) through the Wupatki ball court reverb. **Clip 5** is the same performance, played through the coal kiln reverb. (The mixes are excessively wet, but I wanted to emphasize the effect.)

These lo-fi files don't yield the most accurate of spatial snapshots, yet these reverbs definitely evoke their idiosyncratic sources, providing cool, unique sounds you'd never get from a factory reverb preset. But would they work on an entire mix?

Death Valley Drums

At some point I realized that the claps, clicks, and clunks from Clip 2 might have another use. I dropped a dozen or so isolated sounds into Battery 4, Native Instruments' sampling drum machine plug-in. I fiddled with tunings and EQ till the sound of large rocks on dirt felt like kick drums and clicks behaved like shakers or hi-hats, retaining some reverb tails to convey the cone's eccentric color. I sequenced a simple beat, and then overdubbed nylon- and 12-string guitars, a Dobro played acoustically with an EBow, and some primitive synth bass, moistening the instruments with my new Space Designer coal kiln preset (**Clip 6**).

I won't claim the results sound "good" in any audiophile sense, nor are they an entirely accurate portrait of the modeled space. Still, the ambience feels eerie and evocative. Many engineers and musicians rightly fear the homogenizing effect of digital audio and its ubiquitous plug-ins. But sometimes the best way to break free from "in the box" production is to capture fresh colors and make your own crayons.

Until you get around to creating your own otherworldly ambiences, help yourself to mine! The online version of this article includes a free download of my edited impulse response recordings in WAV and AIFF formats, ready to insert into any impulse-response plug-in. I've also included some of the processed "drum" sounds culled from my field recordings. Just drop them into a sampler and pound away!

JOE GORE *has recorded and performed with Tom Waits, PJ Harvey, Tracy Chapman, Courtney Love, Marianne Faithfull, Les Claypool, Flea, DJ Shadow, John Cale, and many other artists. Joe has written thousands of articles about music and helps develop music tools for Apple and other clients. He blogs at tonefiend.com.*

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Tips for Replacing a 3-Way Toggle

STORY AND PHOTOS BY JOHN LEVAN

Given the popularity of Les Pauls, SGs, Explorers, Flying Vs—and the thousands of other two-pickup axes inspired by these iconic models—it's no surprise I've replaced many failing 3-way switches over the years. Switches get used a lot and eventually they can wear out. When this happens, you'll hear loud popping sounds or scratchy noises, and the signal may even cut out when you're switching pickups.

Fortunately, 3-way toggle switches are easy to replace, and you can do it yourself with just a few tools and a bit of patience. It only takes a few minutes to cover the process, so let's get started.

The project. To illustrate the steps, I'll use a 1983 Ibanez Les Paul copy that has a standard 3-way pickup selector: neck only, neck-plus-bridge, bridge only (**Photo 1**). Charmingly, Ibanez kept the arcane "Rhythm" and "Treble" designations for the neck and bridge pickups.

This is a cool guitar and it plays great, but the toggle switch is shot. Like many imported guitars, it has a cheap switch. I'm going to upgrade the guitar with a Switchcraft model, one of several options preferred by discerning players and professionals who are willing to pay a bit extra for reliability. Let's take a closer look.

Types of toggle switches. On most guitars, you'll find one of two different types of 3-way toggle switches: the *box* style and the *open* style. In a box toggle switch, the internal parts are enclosed—typically in plastic—and they can fail if the prongs get overheated, especially when the switch has been re-soldered too many times. As a result, box switches tend to have a short life.

The internal parts are exposed on an open toggle switch, but open switches are usually made from better materials. Switchcraft double-pole 3-way switches boast solid construction and last a long time, which explains why they're used on so many high-quality instruments.

Open toggle switches come in three styles: short straight, tall straight, and right-angle. The short and tall straight switches have their switching apparatus below the toggle, while the switching mechanism on the right-angle switch is perpendicular to the toggle. All three are wired identically, they simply differ in depth and width. For example, guitars with shallow electronics cavities, such as the SG and many thin ES-style hollowbodies, use the right-angle switch. Gibson Les Pauls take the tall switch.

Here's an easy way to tell which type of replacement switch you need: Check out the minimum cavity size for all three Switchcraft styles at stewmac.com, and then compare these dimensions to your guitar's switch cavity.

Removing the old switch. Using a Phillips screwdriver, remove the cover plate on the back of the guitar to access the switch cavity. If you already have an open switch and you're simply replacing it with a new one, draw a diagram of the old switch or label each wire to help you remember the connections.

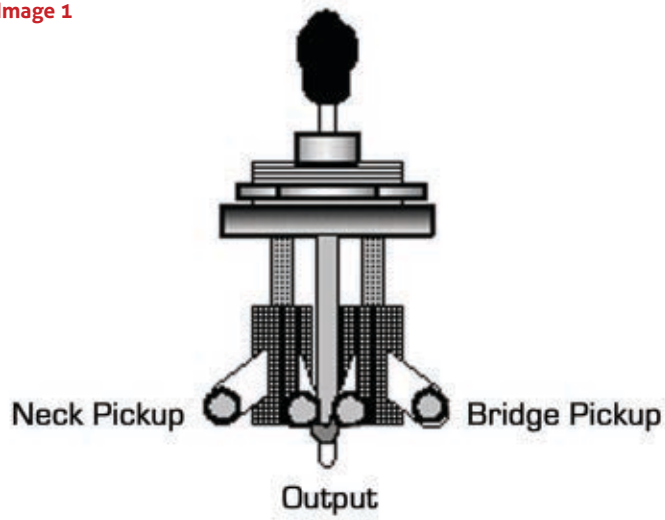
If you're replacing a budget box switch with an open toggle switch, you can use the simple diagrams I've provided as a guide. **Image 1** shows a common 3-way toggle as seen from the front and **Image 2** shows the back view.

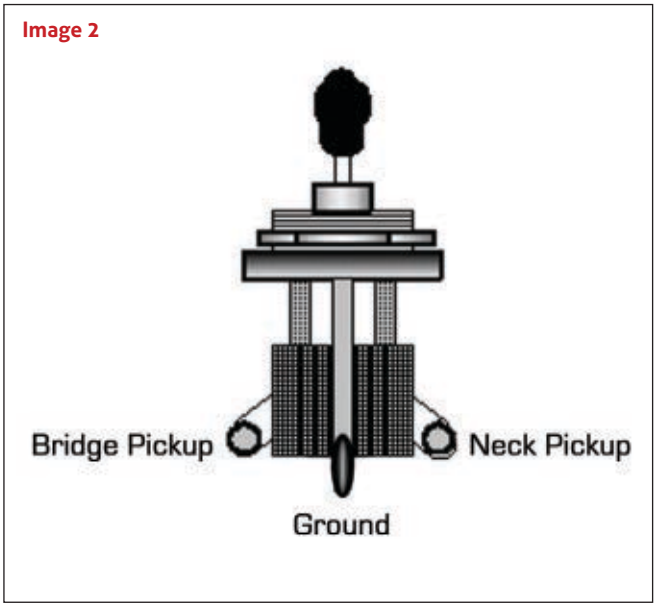
Unsolder each wire and then remove the switch by turning the mounting nut counter-clockwise. Some toggle switches have a hex nut and require a deep well socket wrench, others have a knurled collar nut that can be loosened or tightened using an adjustable toggle switch wrench.

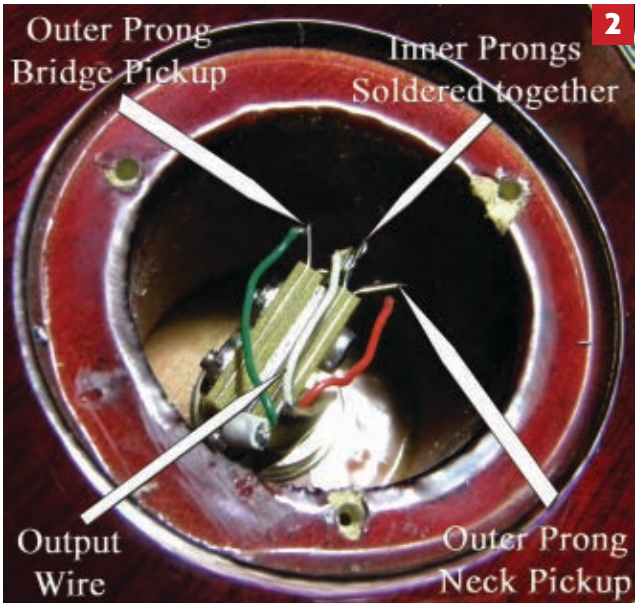
Tip: Don't use a pair of pliers to remove the nut collar! Pliers will mar the knurled nut and if you slip, you'll also damage the top of your guitar.

Installing the new switch. On the open switch I'm installing in this Ibanez, there are four prongs at one end and one

Image 1







prong on the opposite side (**Photo 2**). The four grouped prongs are the switch's inputs and output, and the single prong on the opposite side is the ground. In the group of four prongs, the two outer prongs are the inputs for the pickups and the two in the center are the outputs.

Before soldering, I use hemostats to gently bend the outer prongs (these connect to the pickups) away from the two output prongs between them. Then I crimp the two inner prongs together, because they'll share one wire from the switch's output to the output jack.

Note: Open 3-way toggles may differ physically. On a right-angle switch, for example, the ground prong and the input and output prongs are stacked vertically, and on some straight switches the ground prong is located between the two inputs, while the outputs are on the opposite side. But regardless of the layout, the principle is the same, and once you understand it you'll be able to confidently wire up your guitar. Study the wiring diagram that came with your new switch to confirm how it's configured, or use a multimeter to test and identify the input and output prongs.

Slide the new switch into the switch cavity, thread on the collar or nut, and then tighten it. Be careful when tightening the collar—it only needs to be "finger tight." If you torque it too much, you'll strip the threads. Also be sure to orient the switch so the toggle throw matches the original.

Switches get used a lot and eventually they can wear out. When this happens, you'll hear loud popping sounds or scratchy noises, and the signal may even cut out when you're switching pickups.

Solder up. There are typically four wires to solder: the neck pickup, the bridge pickup, the output (this connects to the output lug on the jack), and the ground. Select a wire and clamp it to its respective prong with the hemostats, then briefly touch the tip of your soldering iron to preheat the prong and wire, and finally touch the solder to the connection just long enough to let a small amount of solder flow over the wire and prong. For detailed soldering tips, see "Tips for Replacing a Strat-style 5-way Switch" at premierguitar.com.

Tip: When soldering, be careful not to heat up the prongs too much. Excessive heat can damage the switch.

Once you've soldered the four wires to their prongs, it's time to check your work. Gently tap the pickups with your hemostats for each position of the switch. You should get neck and bridge alone when the toggle is pointed up or down, respectively, as viewed from the playing position, and both when the toggle is in the center position.

If the neck and bridge toggle positions are working in reverse (i.e., the bridge pickup engages when the switch is up), then reverse the leads on the outer prongs. If the pickups are working correctly, reinstall the cover plate and you're done!

JOHN LEVAN *has written five guitar repair books, all published by Mel Bay. His bestseller,* Guitar Care, Setup & Maintenance, *is a detailed guide with a forward by Bob Taylor. LeVan welcomes questions about his PG column or books. Drop an email to guitarservices@aol.com.*

Slap Bass Fundamentals

BY VICTOR BRODÉN

Photo 1: Learn to use just a very small part of your index finger under the string and you'll eventually be able to pull off more challenging parts without getting stuck.

Photo 2: How it should look when your thumb hits the 3rd string: The bone in the thumb is hitting the string cleanly while the upper thumb is over another string entirely.

Slapping and popping, thumpin', or whatever you prefer to call it: This way of playing bass invokes *the* most polarizing opinions possible. The stigma that slapping comes with can be the absolute worst. Slapping has been misused in so many unmusical scenarios that when one tries to use the technique in an actual musical situation, people are concerned the song is about to be ruined with tasteless playing.

In a session for the Steely Dan classic "Peg" on the band's album *Aja*, bassist Chuck Rainey turned his chair around so the producers were unable to see he was actually slapping! Rainey knew the attack of his thumb would be the sound to make the bass line really stand out and serve the song. If more of us would slap in a musical manner instead of using the technique for crazy machine-gun-like solos, maybe our fellow musicians and producers (and audience members) would take the technique more seriously.

If you have the basics down and want to fit slapping into a song in a natural way, start by practicing your thumb technique on bass lines that weren't originally recorded with slapping. If you don't yet have the basics down, keep reading, because we're going to start from the ground up with a few simple, fundamental exercises.

The basics are *tremendously* important for this style of playing since the attack and brightness slapping brings out of your bass puts you sonically out front, even if you aren't playing that loud. There is simply nowhere to hide when you play a slap-style line. I'm aware the following exercises are very simple, but in the context of a song, your slapping should be too.

The Clean Hit

Make sure you are hitting the string with the bone on the side of your thumb. Hitting just a little off-center from the bone will make your tone sound less punchy and less confident. Practice this by playing slow quarter-notes on your open strings, beginning with your 4th string. Once you move to the 3rd string, the challenge of making sure you aren't accidentally hitting any of the other strings (especially the 4th) with your thumb becomes apparent. An accidentally vibrating string has the power to make a track sound muddy. Achieving a clean attack on every open string is *the* very foundation for slap-bass playing.

The Ghost Note

Many players like to add a ghost 16th-note right before the actual played note. This *can* sound like overplaying or something that makes the groove less funky, but when I slap, I often deem it necessary to add that little pickup note into the groove. In order to execute a ghost note on an open string correctly, you must master the fretting hand mute. I put my four fretting fingers next to each other tightly and hold them straight across all the strings to achieve this.

Try adding the ghost note on the last 16th-note of beat 4 as a pickup note, play a quarter-note on beat 1, and then mute the ringing string when the snare hits on beat 2. With a great drummer playing alongside, this big quarter-note drop on beat 1 of every measure with a ghost note right before it can be very funky in spite of its simplicity.

There are other benefits to keeping the fingers together. As you advance further and start adding the fretting hand as a rhythmic effect, it will increase the strength and volume of your fretting hand when it's used to slap against the fretboard.

The Pop

Economy of motion is very important, and when popping, you can get a lot of volume and effect from a simple movement when executed correctly. Sliding just the *side* of your index finger under the string (instead of the whole tip) will enable you to get a good grip, release quickly, and not get stuck. The skin is a lot softer when you get to the part of your finger where there are no calluses, and getting too much finger under the string can reduce your speed.

To get the circular motion of the wrist between the thumb striking and the index finger popping really smooth and natural, I practice using simple drum grooves. Try playing the drum pattern from Queen's "We Will Rock You" at different tempos using the slap as the kick drum and the pop as the snare. At first, mute the 4th string with your palm so that you can only hear the rhythm. Then try opening up the thumbed notes so that the 4th string rings after your groove is rock solid. Make sure you mute the ringing note completely right before you pop beats 2 and 4.

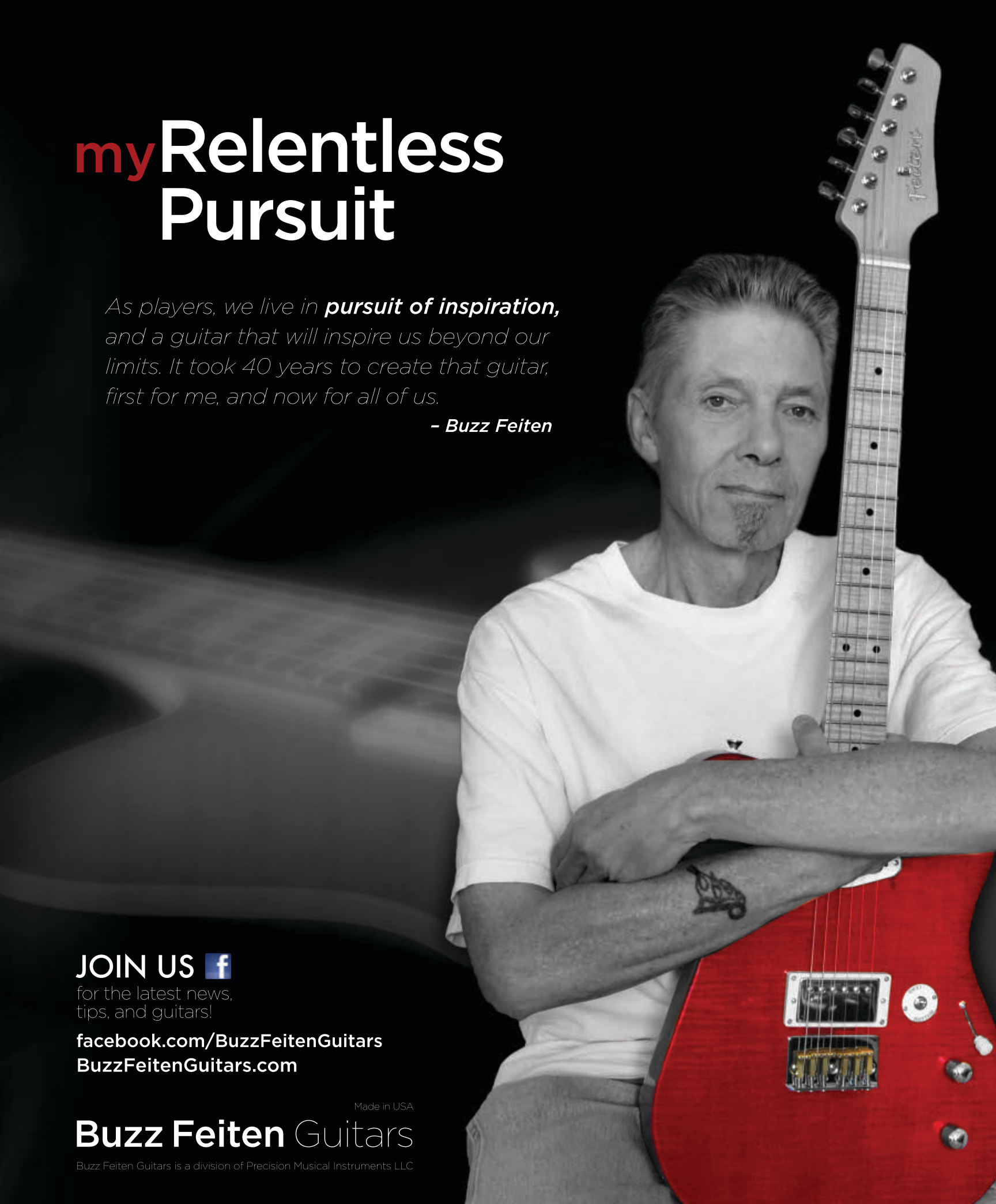
There are several great instructional books on slapping, but some of them don't address these fundamentals properly. The more we slap our way though *simple* bass lines, the more everyone around us will enjoy it. Yes, it's tempting to go for the exercises that will develop machine-gun chops, which come surprisingly easy and sound pretty cool at a jam session for the first few seconds. But once everyone is over how cool it sounds initially, the novelty quickly wears off. Until next time, slap a big fat one on each measure as discussed in the second exercise, and feel how funky all that space is.

VICTOR BRODÉN *is a Nashville bassist and producer who has toured and recorded with more than 25 major-label artists, including LeAnn Rimes, Richard Marx, Casting Crowns, and Randy Houser. You can reach him at vbroden@yahoo.com.*

myRelentless Pursuit

As players, we live in ***pursuit of inspiration,*** *and a guitar that will inspire us beyond our limits. It took 40 years to create that guitar, first for me, and now for all of us.*

– Buzz Feiten



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A Funky Tool

BY HEIKO HOEPFINGER

Photo 1: Funk Fingers are basically short drumsticks, one slightly longer to compensate for the relative lengths of the index and middle fingers.

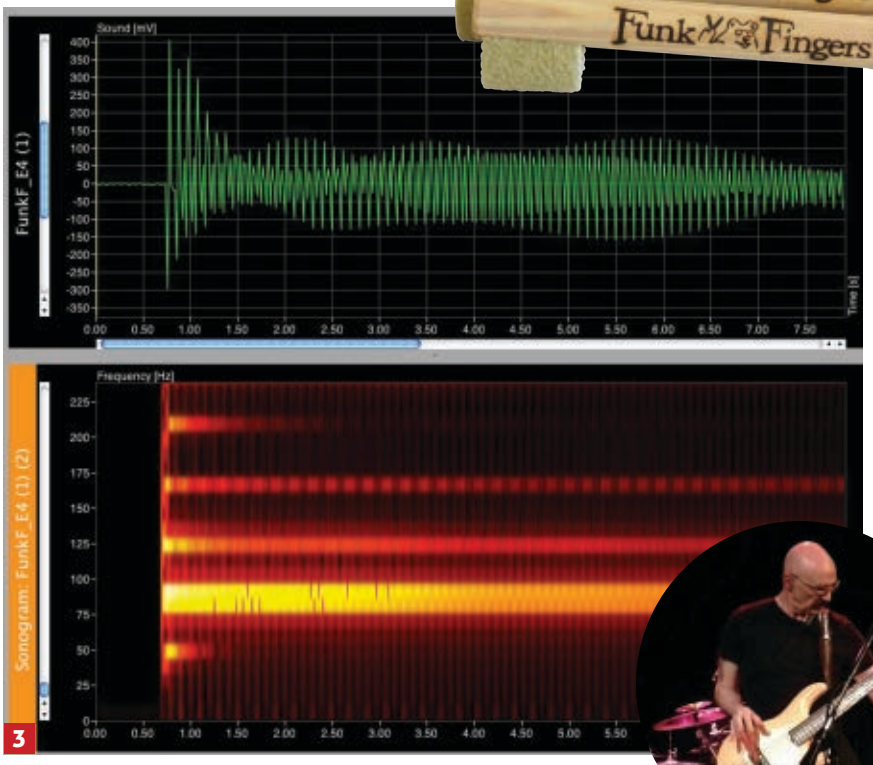

Photo 3: Notes struck with Funk Fingers have a strong attack and prominent first and second harmonics.

Photo 2: Session great Tony Levin created Funk Fingers to replicate a percussive bass sound from the Peter Gabriel song "Big Time."

Some bass tools and tweaks were invented to help obtain particular tonalities. Mark King taped his thumb to control the dynamics of the inner strings when slapping. I used a metal strip from a beer can taped around my thumb to add more treble to slapped notes (and I remember many bloody gigs when the metal broke and the sharp edges pierced my skin). There's also the Slapring, a massive metal ring for slap-style playing that provides a highly metallic tone, not to mention a different playing style thanks to the device's high mass.

Among the less well-known tools of this type are Funk Fingers (**Photo 1**). They originated in a recording session for the song "Big Time" from Peter Gabriel's 1986 album *So*. Drummer Jerry Marotta had used his drumsticks to hit the strings of Tony Levin's bass, and Gabriel suggested Levin tape drumsticks to his fingers to recreate the sound. Tony and his tech, Andy Moore, came up with the idea of two shortened drumsticks taped directly to the tips of the index and middle fingers. Levin (**Photo 2**) also used these on other records and later sold them via his record/publishing company, Papa Bear Records.

"The Funk Fingers have had a long and interesting history," Levin said in 2013. "After having them made here in Woodstock for a year when the idea was new, I ceased producing them, thinking there were enough out there in the world." But after several years of absence, Funk Fingers reappeared in 2013 in a licensed and improved version by Kevin Andreas of Expanding Hands Music.

Funk Fingers are strapped to the index and middle fingertips. One stick is slightly longer to compensate for relative lengths of the two digits. Most players use them by shifting the thumb toward the edge of the body from its normal position directly above the pickups. (This might be a problem on small-bodied instruments such as Steinbergers.) They allow bassists to hit the strings faster and more heavily for punchy and powerful tones, especially on the initial attack. Still, most of this power is lost once the string hits the fretboard.

The sample note used for the spectrum and sonogram in **Photo 3** is an open E with its fundamental at 41.2 Hz. Remember, the fundamental has its greatest amplitude in the middle of the string around the 12th fret (and nodal points at the bridge and nut). This is close to the end of the fretboard, and also close to the point where the string hits the fretboard when played with Funk Fingers. That means we can't expect much of the fundamental to make it into the sustaining portion of the note—we'll see more of the first harmonic, with its nodal point in the middle of the string. Depending on the fretboard's length, there may even be a high ratio of the second harmonic in the remaining spectrum, and that's exactly what we see in the sonogram: a powerful, but rapidly dying fundamental with prominent 1st and 2nd harmonic that eventually take over in the sustaining note. The initial attack and increased upper harmonics are the main reasons why Funk Fingers cut through in a band mix.

Another thing you have to get used to with Funk Fingers is their high mass and greater distance from the strings. That mass makes it hard to correct bad timing once the sticks are on their way, and the increased distance is another thing that can easily destroy the groove. So don't expect to play fast, syncopated solos with them. Even Tony Levin plays relatively simple, steady grooves when using Funk Fingers.

HEIKO HOEPFINGER *is a German physicist and long-time bassist, classical guitarist, and motorcycle enthusiast. His work on fuel cells for the European orbital glider Hermes led him to form BassLab (basslab.de)—a manufacturer of monocoque guitars and basses.*

Photo 2: Photo courtesy of Jeremy Nesse **Photo 3:** Photo courtesy of basslab.de

SCAN TO READ AN INTERVIEW WITH SEAN HURLEY.
Photo: Ralf Bjurbo
The EBS ValveDrive DI is my go-to pedal to give me anything from a subtle vintage growl all the way to a heavy, dirty distortion. It's my #1 pedal.
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Trad Strat *and* Bridge 'Bucker Tones

BY DIRK WACKER

As you know, there aren't many guitars with four pickups. Yes, there are historic examples of four-pickup guitars, like Fender's supposed mid-'60s Marauder prototype with four stealth pickups beneath the pickguard, some Italian-made Eko guitars, and some Japanese Kimberly models. But nowadays you rarely encounter four pickups other than in custom builds.

But recently one of our customers, who plays in a well-known Top 40 band here in Germany, requested a four-pickup design to avoid changing electric guitars onstage. He wanted three standard Strat pickups on a Strat pickguard, but with Tele-style master volume/master tone controls *and* an extra bridge-position humbucker.

Initially I thought we could use a HSS Strat configuration with master volume and master tone, plus the possibility of splitting the bridge humbucker to make it a single-coil. But that wouldn't do, because the customer's personal switching matrix demands a bridge single-coil and bridge humbucker at the same time (more about this in a bit). Additionally, he said he didn't like the single-coil tones of split humbuckers. (I more or less agree. Split-humbucker tones are often "single-coil-like," but they can't match a real Strat bridge pickup. Yes, some humbuckers are specially designed to sound like true single-coils in split mode, and they do, but pickups of this type usually don't sound optimal as humbuckers.)

So this is a real dilemma, one requiring an unusual solution. After much back and forth, we arrived at these specs:

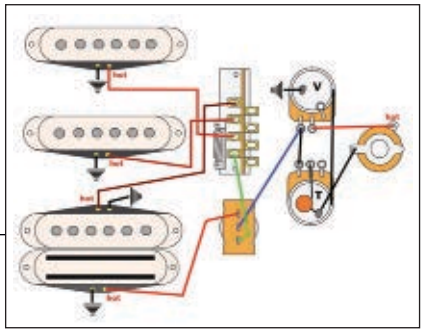
- Three standard Stratocaster pickups with a 5-way switch and standard Strat wiring.
- Telecaster-style control layout with master volume and master tone.
- Additional bridge humbucker, bypassing the 5-way switch regardless of its position, so that adding the humbucker works as a sort of "solo switch" for fat lead sounds.
- The humbucker gets added in parallel, regardless of the 5-way switch setting.
- When the humbucker is bypassed and the 5-way switch is active, master volume and tone are engaged (normal Stratocaster mode).

We decided to use a standard Stratocaster HSS pickguard with three holes for the controls, populated with a standard Stratocaster single-coil pickup set plus a Stratocaster single-coil-sized humbucker, 5-way switch, and 250k master volume and master tone pots. For the humbucker, we'd install a standard Gibson-style 3-way on/on/on pickup-selector toggle in the pickguard's third hole.

We had to enlarge the body's typical three-chambered routing to accommodate the bridge pickup ensemble. Since our customer liked the idea of reducing the guitar's weight, we went with a "swimming pool" rout: one big cavity for all three pickups. We shielded the rout with thick copper foil connected to ground, making the axe as quiet as possible. We also shielded the pickguard with one of our custom-made thick copper plates (also wired to ground), and then we installed the pots and switches.

Now it was time to install the four pickups. The customer chose a Strat set with a RW/RP middle pickup, and to be on the safe side, we ordered a Strat single-coil-sized humbucker with four-conductor wiring to correct any possible phasing issues. (Usually customers want all their pickups in phase when using them in parallel, so it's always a good idea to sort this out from the start, especially when combining pickups from different manufacturers.)

Installing the neck and middle pickups was easy, but combining the bridge single-coil and the humbucker was not. Usually HSS pickguards have a plain, non-angled rout for the bridge humbucker, but naturally, our customer wanted it to be angled. We found such a pickguard, but ran into two other problems: There were two holes in



the middle of the humbucker cutout to fasten a standard-sized humbucker, but we couldn't use these to install two individual Strat pickups. Also, because of the Strat pickups' bottom flatwork (with its "nose" on one side), we couldn't fit both pickups into the humbucker cutout.

We solved both problems by drilling four new holes to fasten the pickups. We inserted dummy screws into the original humbucker screw holes, securing them with hex nuts under the pickguard. (This looks cleaner and less conspicuous than attempting to fill the holes with colored putty or the like.) Since the humbucker had two blades on top, we simply rotated it 180 degrees. Thanks to the swimming pool routing, there was plenty of space. The rest of the wiring was easy.

After installing the pickguard and playing the guitar, I was surprised how good it sounded and how flexible this setup is. After getting the phase issues right (naturally there were phase problems when combining the humbucker with the Strat's middle pickup—thank heavens for four-conductor wiring!) we experimented a bit with pickup height adjustments. Result: a versatile, good-sounding Strat and a smiling customer.

Image 1 shows our final wiring diagram. To keep things clear, I show only the two connected humbucker wires (hot and ground), and I depicted the angled bridge pickups in a straight arrangement. Both pots are 250k. The tone cap is a .022 µF, and the switch is single-pole on/on/on. That's it! Until next month ... keep on modding!

DIRK WACKER *lives in Germany and has been a guitar addict since age 5. He's also a hardcore DIY-er for guitars, amps, and stompboxes and runs a website on the subject (singlecoil.com). When not working at his guitar workbench, he plays country, rockabilly, surf, and flamenco. Contact him at info@singlecoil.com..*

Image courtesy of singlecoil.com

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– ***Eric Johnson***

Photo: Max Crace

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Read the Eric Johnson Tone Capsule story at RolandUS.com/EricJohnson

Taming a Hiwatt DR-201

BY JEFF BOBER

Q: **Hello Jeff,**
I have a Hiwatt DR-201 AP that makes the most glorious sound I've ever heard with a guitar. But it's loud! I have a 200-watt Weber attenuator, but it can't take the output. Can I pull power tubes from this amp to reduce the volume? If so, which ones? Is there a way to get the amp down to 50 watts?
Thank you!
C.J. Rebel

1

A: Thanks for your question, C.J. A Hiwatt DR-201 (**Photo 1**) is a rare creature, and it's pretty evident why: Where can you unleash a 200-watt head these days? (We'll leave those pesky bass players out of this.) Anyway, I completely understand what you mean by "the most glorious sound I've ever heard." I've always compared playing a chord through a Hiwatt to hearing one on a grand piano. It's a big, bold, full-frequency sound.

And the percussive factor of a 200-watt (or even larger) Hiwatt is damn near frightening, so I sympathize with your plight. As for your question about pulling tubes, in this particular case I would highly recommend *against* it. The power-supply voltages are already substantial (even dangerously high), and removing tubes would cause that voltage to rise even higher. So let's see if we can achieve your goal in a different way.

According to schematics I've perused, Hiwatt apparently produced two versions of the DR-201: One with six EL34s in the output stage, the other powered by four KT88s. Theoretically, the four-KT88 model is more capable of producing the 200-watt stated output than the six-EL34 version, which would probably be closer to 150 watts.

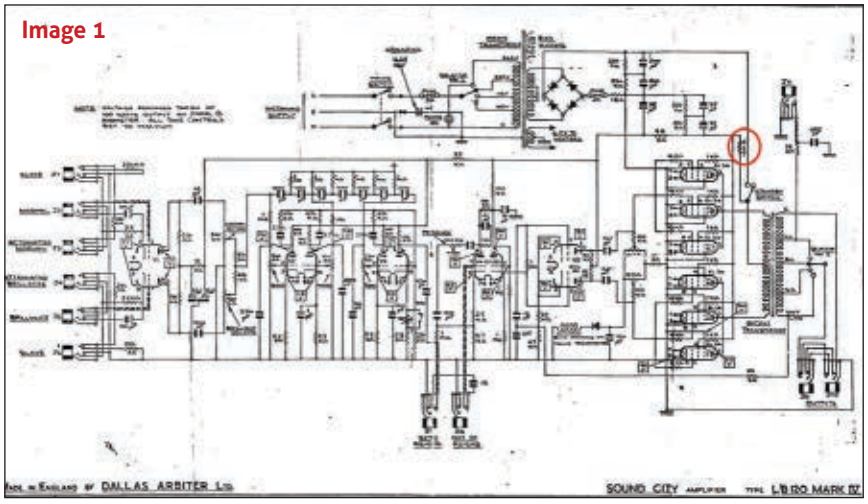
But I don't believe either configuration actually produces 200 watts of continuous power. The power supply design in both amps should be identical, and while the stated 650V DC plate voltage should be more than ample to support a 200-watt amp (given enough current capability), the power supply only provides 410 volts to the screen grids of the tubes.

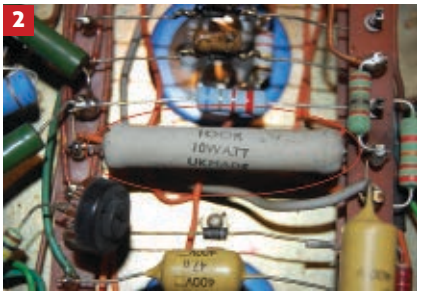
This is atypical for a guitar amp, as usually the plate and screen grid voltages are almost identical. Think of the screen grid as a governor on an engine: A voltage close to the plate voltage creates almost no governing, while a markedly smaller voltage "throttles back" the amp's output power. Lowering the voltage on the screen grids by increasing the size of the power-supply resistor that feeds them reduces the continuous output power of the amp. This modification can be used on similar amps with six EL34s in the output stage—for instance, a Sound City head.

In the Sound City example, we can increase the value of the 100-ohm resistor (**Diagram 1** and **Photo 2**) to 2000 ohms (2k), which reduces the output power to approximately 50-60 watts. But as mentioned before, this voltage is already substantially lower in the Hiwatt amp, which leads me to believe that it may actually fall short of 200 watts of continuous power.

However, that's not to say it isn't loud, as the high plate voltage would give the DR-201 great potential for peak power during the note attack—which we know it has! So we can't perform that type

Image 1

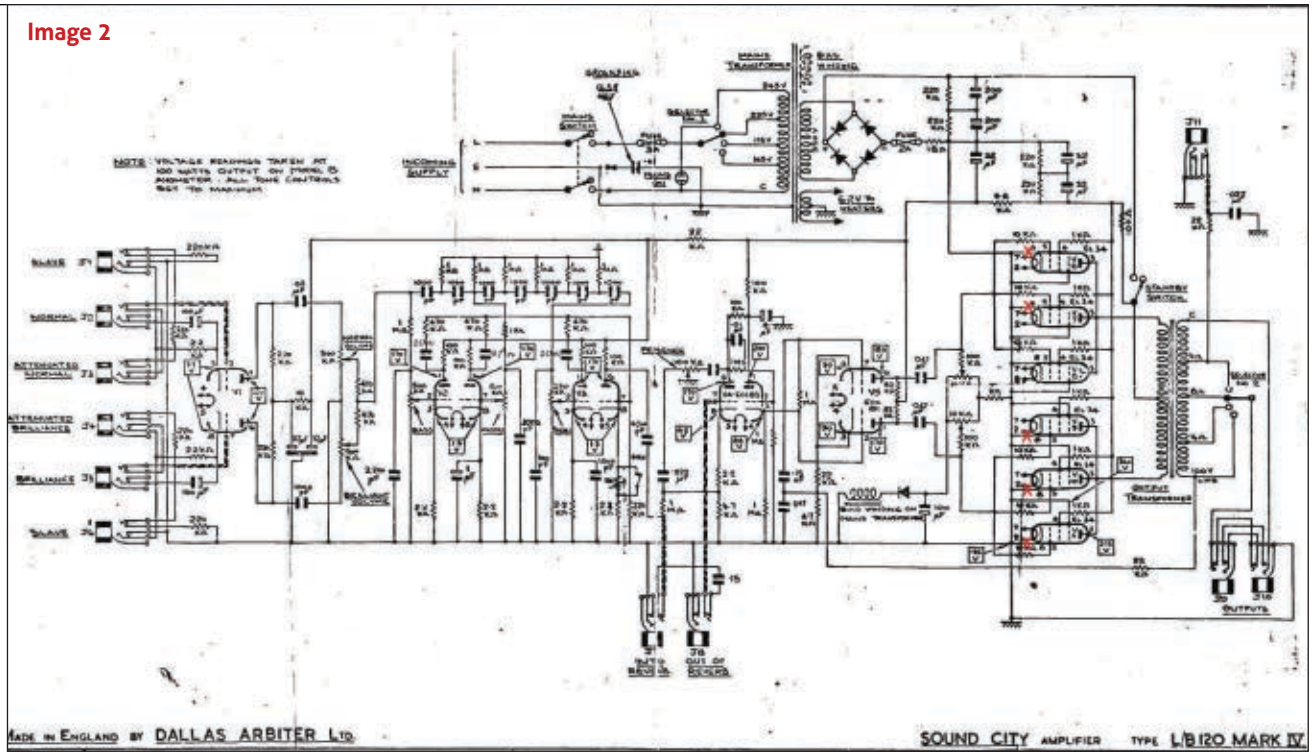




2

WARNING:
All tube amplifiers contain lethal voltages. The most dangerous voltages are stored in electrolytic capacitors, even after the amp has been unplugged from the wall. Before you touch anything inside the amp chassis, it's imperative that these capacitors are discharged. If you are unsure of this procedure, consult your local amp tech.

Image 2



3

Think of the screen grid as a governor on an engine: A voltage close to the plate voltage creates almost no governing, while a markedly smaller voltage "throttles back" the amp's output power.

of modification on your amp because it already exists, but there is one more modification that can tame the beast.

This next mod will lift the output tube cathodes from ground, thereby reducing the output power. Fender actually employed a very similar design in some of their post-CBS-era amps. Their new engineers were always trying to "improve" things, but I'm not quite sure what their goal was with this design, as it held back the amp's clean output power. Fortunately that's exactly what we want here, so let's do it.

As shown in **Diagram 2**, I did this modification to a Sound City amp, and it did indeed retain all its tonal characteristics while making the amp much more useable and more easily pushed into overdrive.

With the amp chassis upside down (of course) on the bench, locate the four (KT88) or six (EL34) output tube sockets. You should see pins 1 (to the right of the locating keyway) and 8 (to the left of the keyway) tied together and connected to ground. The ground connection will either be right at the tube socket, or made with a common wire connecting all the tubes to ground.

Disconnect pin 8 (left of the keyway) from this ground connection on all the tube sockets, while leaving pin 1. I recommend doing this with the output tubes removed because it makes for easier de-soldering and soldering, since the tube pins aren't stealing all the heat from your soldering iron.

Next, install resistors from pin 8 to the ground connection, which should still be pin 1 (**Photo 3**). These resistors should be at least the 5-watt variety. A 100-ohm value should place the amp in the 100-watt range, while 200-ohm resistors will drop it to approximately 50-60 watts.

Well, there you have it. The amp is now quasi-cathode biased and should sound very cool and manageable.

JEFF BOBER *is one of the godfathers of the low-wattage amp revolution. He co-founded and was originally the principal designer for Budda Amplification, though he launched EAST Amplification (eastamplification.com) in 2010. You can catch his podcasts at ampsandaxescast.com or email him at pgampman@gmail.com.*

In Search of New Inspiration

BY BRADY SMITH

I'm not the most technically proficient candidate to write about why guitar pedals do what they do or how tweaking a particular component gives you a different result. But over the last few years, the doors have opened on how guitar pedals can be used—alone or in conjunction with other pedals—to create the sounds that I want to hear. And I've been trying that out, testing those boundaries, relative to the style of playing I like, or what comes naturally to me.

So, I guess that's why I'm here. Honestly, I'm probably not great at advice either, but I can have a conversation. And that's what this is: my thoughts in a public forum about the social science of creativity in the vein of guitar and guitar pedal-related things. (Already, I ramble.)

Change the channel? I have a friend. This guy plays guitar better than me, is skilled enough to play a number of different genres, has good taste in music and a great sense of humor, and is by far the most practical person I know. I spent numerous days in his workspace before noticing that he only listens to the local sports talk radio show. I get it—he likes sports. We live in a college football town, and Oklahoma City has garnered a lot of interest with their relatively new NBA team, the Thunder. So sports talk gets his gears going—no problem with that.

He never listens to music. How can you play music and not like listening to music? It doesn't compute for me, like a guitar builder who doesn't know how to play guitar. I. Don't. Get. It. So I asked him why he doesn't listen to music. His response changed the way I process recreational listening in relationship to the music I want to create: "If you isolate yourself from others' music, you limit their influence over you. Your own ideas come forth, and your true influences come to the surface. What is popular in that moment won't affect you."

That's it. That's what this is about. Letting your brain rest. Finding inspiration from things other than your favorite music or the latest listen. That was hard to do at first. It still is in some ways.

I get in funks. The same melody runs through my head for weeks at a time. Sometimes I pick up the guitar and play the same rhythmic progression I've had in my repertoire for the last 10 years. And I'm stuck—it's all that will come out. Then I continue to force engagement with something un-engageable, producing nothing usable, or I put down the guitar, done for the day. Neither of those is a great option. There's an argument to be made for pushing in—digging deeper and forcing something out. But not here. Not now.

What you put in is what will come out … sometimes. I listen to a lot of music. When I'm sitting at a desk building pedals or at a computer, my ears pine for something auditory, preferably new and possibly familiar. I have to support the monotonous building or email writing with something that keeps the unused parts of my brain busy, but it can be too much. It can stifle whatever new ideas are lurking in my subconscious and replace them with something I just heard, or have heard many times. To take note from the current Sam Smith/Tom Petty mini-controversy of subconscious songwriting, sometimes what you put in is what comes out.

So what do you do? I guess take a break, stop listening to music for a bit. Turn on talk radio. Download one of millions of podcasts. Get a book on tape. Listen to anything void of a melody to give your brain time to clear out, regroup, and refresh. Or sit in silence. Take a deep breath. Escape the noise. That works too.

Boundaries are meant to be broken. I realize what I'm saying here. And blocking out music is probably not the easiest thing to do if you're currently reading this publication. Ignore music to make better music—could that be a thing? An actual, helpful thing? I think so. There are a lot of ways to find new inspiration. Music is just one. Movies, books, nature, people, pets. Try those too.

But I don't know much. I don't know if this advice will do you as much good as it has done me. But maybe it'll help a little. I'm not an expert on ignoring music either. That could be why I'm here. I'm Brady. I make pedals.

BRADY SMITH *is the cofounder of Old Blood Noise Endeavors and the Coffee & Riffs video series, as well as a part time guitar tech. Despite his deteriorating posture, he has a strong affinity for Jazzmasters and Aluminum necked guitars. And coffee. And sleep.*

Photo by Blake Studdard/Atria Creative

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$189 street

archangelelectronics.com

2
FISHMAN
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$249 street

fishman.com

3
GMF MUSIC
Ai1

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gmfamps.com

4
L.R. BAGGS
Session Acoustic DI

This compact and easy-to-use DI includes analog saturation to enhance warmth and harmonic content, a proprietary anti-feedback notch filter, compression/EQ, a variable high-pass filter, and a VU meter to optimize gain visually.

$249 street

lrbaggs.com

5
RADIAL ENGINEERING
PZ-Pre

This 2-channel preamp/DI features discrete class-A piezo boosters, myriad connectivity options, and an ultra-quiet preamp circuit suitable for a wide range of pickup systems. New this year: a side-access switch for constant operation of the effect loop.

$299 street

radialeng.com

6
LEHLE
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$399 street

lehle.com

7
TECH 21
SansAmpPara Driver DI, Version 2

Version 2 of this tone-shaping DI boasts two new features: a rumble filter for removing unwanted subsonic frequencies, and an air button that adds top-end clarity and sparkle to acoustic instruments.

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8
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Pure XLR Mach 2

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kksound.com

9
ASHDOWN ENGINEERING
AA Acoustic Preamp

Based on the preamp in Ashdown's acoustic products, this pedal features an adjustable notch filter, a selectable pre-shape EQ control, 2-band EQ, and input and output level controls.

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ashdownmusic.com

10
HEADWAY MUSIC AUDIO
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headwaymusicaudio.com

Quick Hits

DUNLOP
Cry Baby Mini Wah
By Charles Saufley

Built around a Fasel inductor, the Dunlop CBM95 Cry Baby Mini sounds fat, with a full, vocal sweep. Compared to a newer, full-size Cry Baby, it sounds every bit as good—if not better, since the internal switch lets you choose between low, vintage, and CB95 modes to tailor tones to your rig and style. I favored the way the low voicing tamed my trebly, Fender-centric rig.

Does it feel weird? Mostly not. It works and feels best with your foot situated as you would on a standard-sized wah—with the back of your arch over the fulcrum. You just have to get used to the ball of your foot and toes hanging over the top edge. You still have all the necessary leverage for slow sweeps and quarter-note funk dots, though you might miss the mass of a larger rocker during fast-twitch moves. To avoid activating other pedals, you have to be careful about pedalboard placement, too. On the whole, however, the Mini is as capable as it is cute.

TEST GEAR *Fender Telecaster, Marshall 1958X, Fender Tremolux*

RATINGS

$99 street, jimdunlop.com

Tones	4.5
Ease of Use	5
Build/Design	4.5
Value	4

PROS Fat sound and full sweep. Three versatile voicings. Light and compact. Feels surprisingly natural for most applications.

CONS Small rocker makes fast, twitchy moves harder. Size can complicate pedalboard placement.

CLICK HERE TO HEAR *this pedal at premierguitar.com/may2015*

ZEPPELIN
Percolator
By Shawn Hammond

The 2-watt Percolator is available as a $259 DIY kit or a pre-assembled head (tested here) that looks like a cross between a Heathkit project and an assignment for woodshop. The sturdy, solid poplar cabinet houses a 20-gauge, laser-cut steel chassis containing an all-tube circuit that runs off a single new-old-stock Compactron 6AF11 tube driving an 8 ohm output. Developed by GE in 1960 as transistors were encroaching on tube dominance, Compactrons aimed to modernize valve technology by combining the functionality of multiple tubes in one. The 6AF11, for example, contains two triodes and one pentode.

The Percolator offers a variety of dynamic, tactile tones via its single volume control. Up to its midpoint, the knob serves up burnished clean sounds at conversation volume. Past there, you get a little more volume but mostly more dirt. At two-thirds, you get a gritty, Fender-like overdrive with adequate definition for rootsy rock—though even a Tele's bridge pickup struggled a bit to find its characteristic snap and twang. Cranked, the head gets gristly and less distinct in a way that psych-rockers would love.

TEST GEAR *Goodsell 1x12 w/Jensen Jet Falcon speaker, Squier Classic Vibe 1950s Telecaster w/Nordstrand NVT A3 pickups, Eastwood Sidejack Baritone DLX w/Manlius Goatmaster pickups, Pigtronix Fat Drive, Catalinbread Topanga, Ibanez ES-2 Echo Shifter*

RATINGS

$349 direct, zeppelindesignlabs.com

Tones	3.5
Ease of Use	5
Build/Design	4
Value	3

PROS Variety of dynamically responsive, mid- and low-mid-heavy tones at bedroom volumes.

CONS May be difficult to conjure bright, sharply defined tones with certain speakers.

CLICK HERE TO HEAR *this amp at premierguitar.com/may2015*

DANELECTRO

'63 Dano

By Jason Shadrick

Even from a distance, you can't mistake the retro art-deco looks, offset curves, and unmistakable vibe of a classic Danelectro. The '63 Dano is the company's latest reissue of their classic "amp in a case" body style that caught the eye of many guitarists flipping through the Sears catalogs of the '60s. Built around a pair of '56 Lipstick pickups, the new '63 is impressively clear.

With a Deluxe Reverb in the mix, it was easy to dial in a warm, round jazzy sound on the neck pickup (though I felt the tone and volume controls could be a bit more responsive). The mid position felt a bit thinner than my Strat, but offered enough "quack" for lo-fi funk parts. When combined with a Visual Sound Route 66 Overdrive, the bridge pickup delivered a fair bit of sustain, but lacked some top-end bite. There were some intonation issues, but given the '63's playability and price, it will easily find its place among working players with nostalgic hearts.

TEST GEAR *Fender Deluxe Reverb, Visual Sound Route 66 Overdrive/Compressor*

RATINGS

$399 street, danelectro.com

Tones	
Ease of Use	
Build/Design	
Value	

PROS Immensely playable. Wonderfully musical tones in the neck and mid positions.

CONS Intonation issues. Could use more responsive volume and tone controls.

CLICK HERE TO HEAR *this guitar at premierguitar.com/may2015*

GOGO TUNERS

Caliber Pedal Tuner

By Rich Osweiler

GoGo Tuners has made their mark with a variety of clip-on tuners, but the new Caliber Pedal Tuner is the company's second stompbox offering. The gunmetal-gray finish of the sturdy metal enclosure provides a stealth demeanor, but you can't miss the big display. It takes up about 75 percent of the top surface and gives the pedal the look of a chunky smartphone. Battery power is an option, but I fired up the true-bypass tuner with a 9V Boss-style adaptor (not included) and plugged in.

The display is fantastic. The large flat/sharp indicators and big, block-letter notes are broadcast in bright, high-definition clarity, and everything that illuminates on the display turns from red to green when you hit your desired mark. I daisy-chained with a trusty Boss TU-2 and also tested the GoGo against the tuner function in GarageBand: The accuracy is spot-on. The calibration push-button on the left side permits easy scrolling through reference pitches from 430 Hz to 450 Hz (though it's location and ease-of-push could prove vulnerable to an inadvertent foot graze). The Caliber Pedal Tuner is priced similarly to rival products, but its exceptional display warrants special consideration.

TEST GEAR *1974 Epiphone ET-290 Crestwood, 2001 Fender Precision, 2005 Larrivee parlor*

RATINGS

$99 street, gogotuners.com

Ease of Use	
Build/Design	
Value	

PROS Solid and accurate. Massive easy-to-read display.

CONS Calibration button could be susceptible to happy feet.

PREMIER GEAR

TAYLOR 618e

By Charles Saufley

Taylor is one of the biggest guitar companies in the world, but also one of the most individual. Tradition-minded players and antique acoustic purists may not be fans of Taylor's approach to tone or construction, but the company's never-say-retro, North American-made instruments tend to feel, play, and sound like, well, Taylors. In an age when reverse engineering, CNC, and improved overseas production have narrowed the quality and individuality gaps, few brands can manage that feat.

The Taylor 618e—the biggest and baddest instrument in the maple-and-spruce-based 600 line re-imagined by Taylor design maestro Andy Powers—has that unmistakable Taylor feel. It's super-playable, with strong midrange and a lively, immediate response—all Taylor hallmarks. Yet it's also an unusual-sounding guitar for its size, with a unique tone palette and a dynamic range that fingerstylists in particular will find ripe for exploration.

Built to Blast

The 618e is a pretty big guitar. At 16 3/4", the Grand Orchestra-style body is just 1/4" narrower than a Gibson J-200, while the 5" depth is a quarter-inch greater than on the Gibson. Still, the Taylor feels smartly proportioned, balanced, and even a bit smaller than it really is. That said, smaller players should spend time with the guitar before buying to determine whether its depth is likely to cause fatigue. (If so, consider the smaller maple-and-spruce 612e, among other models.)

As with most Taylors—especially in this price range—it's nearly impossible to fault the build quality. From the kerfing and bracing to the binding, neck joint, and headstock overlay, every seam and cut is flawless. Upmarket touches like the stylized, ivoroid "wing" inlays seem a bit flash, at odds with the 618e's otherwise organic, old-world personality. Others are tasteful, even exquisite, especially the gorgeous ebony pickguard and backstrap, which lend a bespoke touch.

Taylor made maple backs and sides the foundation of the 600 series in part because of the company's laudable focus on sustainability—it's a relatively plentiful tonewood from carefully managed North American forests. It's also a widely underestimated tonewood, at least relative to mahogany and rosewood. For the new 600s, designer Powers experimented extensively with back thicknesses and bracing shapes and patterns to discover what worked best with maple's bright, responsive tones. As we'll see, his efforts yielded captivating—and often surprising—sonic dividends.

The maple back and sides make the 618e look simultaneously striking and traditional. Powers opted for an ultra-thin polyester finish over a hand-rubbed stain called "Brown Sugar." While the molasses-hued finish makes the stripey maple grain pop a little less than it might have under a less opaque treatment, it gives the 618e an almost antique elegance that invites comparisons to cellos, violins, and old Gibson archtops. The brown sugar stain also complements the toasty-looking Sitka spruce top, which is quite literally toasted though the process of torrefaction.

Orchestral Indeed

Most fingerstylists like the balance and dynamics of smaller bodies like 00s and OMs. But the big 618e *excels* as a fingerstyle instrument, especially with open tunings in the C and D range. Bass notes in open C sound absolutely huge, ringing almost endlessly with piano-like sustain.

Yet as big as the 618e can sound, it reacts beautifully to a light touch. The combination of maple and spruce lends treble notes a bell-like brightness that contrasts beautifully with the deeply resonant bass notes. The guitar is incredibly responsive to fingerpicking dynamics. Between its wide-ranging dynamics and elastic playability in C and D tunings, the 618e is *crazily* expressive—a perfect vehicle for everything from complex chord melodies to ringing sitar-like bends over bassy drones.

The 618e's string-to-string balance works beautifully for flatpicked leads. Strumming with a flatpick summons a more contemporary sound, though this is the least flattering application of the guitar voice. Heavily strummed eighth-note rhythms can emphasize maple's propensity for fast note decay in the mid and upper-mid ranges. As a consequence, midrange can sound boxy and compressed relative to the more resonant bass. (Strumming with a thinner pick and lighter touch creates a more harmonically complex sound picture.) Syncopated, stabbing rhythm parts—especially ones voiced well up the neck—benefit from the fast decay and midrange punch. Ever wondered why Pete Townshend loves maple-backed Gibson Jumbos? Have a bash at "Pinball Wizard" on the 618e and you'll get it.

The Verdict

Jumbo-sized flattops aren't generally praised for versatility—they're usually favored by songwriters, rockers, and strumming country singers. But the 618e shatters that notion. It's an exceptionally expressive and dynamic fingerstyle instrument that sounds richly detailed when played with a delicate touch. The Expression 2 electronics are a great match for the resonant bass tones and bright maple voice. The 618e's extreme playability makes it feel like less of an armful than it otherwise might. It's a bit of a big-ticket item, but this virtually flawless guitar seems likely to last about as long as an acoustic instrument can.

The 618e isn't without limitations. It's a less-than ideal strumming guitar for heavy-handed rhythm players. But the tradeoffs are numerous and surprising, resulting in a flattop with a truly unique voice.

CLICK HERE TO WATCH A REVIEW DEMO of this guitar at premierguitar.com/may2015

Ebony fretboard

RATINGS

Taylor 618e

$2,799 street
taylorguitars.com

Tones	4½
Playability	5
Build/Design	5
Value	3½

PROS Unique maple-and-spruce tones. Super playable. Flawless construction. Excellent fingerstyle dynamics. Huge bass tones.

CONS Boxy midrange when strummed hard.

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The Ocean at the End
theteaparty.com

PHOTO : BRAD CONRAD

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KORG Nuvibe

By Joe Gore

You probably know the Uni-Vibe story: Created in the 1960s to mimic a Leslie cabinet, the effect didn't really sound like a rotating speaker, yet it was embraced by Hendrix, Gilmour, and others, becoming the first popular chorus effect. Subsequent products from Roland and Electro-Harmonix modernized the sound, defining what most players now think of as chorusing. But the Uni-Vibe, with its dense, chewy tone and complex, asymmetric modulation, remains a sound unto itself.

Now imagine you're a pedal designer tasked with updating this beloved but eccentric effect—how would you proceed? Clone it? Streamline the design for modern pedalboards? Or echo the original's eccentricity with something equally odd?

Korg boldly chose Option C for Nuvibe, their re-imagined Uni-Vibe. It's an unapologetically quirky effect that nails the original sound while offering meaningful new wrinkles. (Perhaps tellingly, Fumio Mieda, who created the original Uni-Vibe for Japan's Shin-Ei corporation, was part of Korg's Nuvibe team.)

Perilous Parts

Literal Uni-Vibe clones are now a virtual impossibility—the original's photo-resistors (the light-sensitive components that generate the effect's modulation) were made from hazardous cadmium sulphide, now a controlled material. Meanwhile, many modern builders have capably mimicked the original Uni-Vibe sound via ICs and DSP chips. The little-used vibrato option is often omitted, as is the dedicated foot controller. And naturally, modern units are smaller. (The latest version from Dunlop/MXR, current owner of the Uni-Vibe name, comes in a standard B-sized box.)

Korg did things differently. For starters, Nuvibe is roughly the size of Rhode Island. (Actually, it's about as big as the original: approximately 10"x7"x3", not counting the included foot controller.) And while it's assembled on modern circuit board, it uses through-hole components and discrete transistors in lieu of ICs, contributing to its mass. If you're the sort of player who frets about "pedalboard real estate," shriek and run away.

Beyond the Fishhook

But Korg makes the most of both the pedal's ungainly size and the unavailability of the original photo-resistors. A complex network of transistors stands in for the photo-resistors, and the new design lets you alter the modulating waveform via 10 large, easy-to-wrangle sliders. White lines denote the original fishhook-shaped waveform, but that's just a starting point—you can concoct near-infinite variations. This fun, tactile, and musically useful interface is Nuvibe's marquee feature. (Nice touch: each slider has an LED, and the 10 lights flash in time with the modulation rate.) The sliders enable endless variations of the classic tone, several of which appear in the audio clip accompanying the online version of this review.

Other modern updates include an output level knob, a dedicated speed control so you don't *have* to use the foot pedal, plus no-brainers like true-bypass switching and pedalboard-friendly power. (Oddly, though, Nuvibe uses six 1.5V AA batteries rather than a single 9V. Even odder, no 9V power supply is included—and you'll need one, unless you want to replace a half-dozen batteries every few hours.)

Sexy Swirl

Nuvibe's chorus sound is gloriously rich, immersive, and textured. It still doesn't sound like a Leslie, but its head-spinning swirls have similarly compelling complexity. Latter-day chorus effects are more manicured and predictable—and more fatiguing. This is a sound you can hang with for a long time (or at least the duration of a song). Contemporary chorus effects often sound, well, dorky. This is just plain sexy.

Switching from chorus mode to vibrato mutes the dry signal, transforming your tone from a swoosh to a wobble. Relatively few players have used this effect, and that's a shame—applied lightly, it's a lovely, less rhythmically assertive tremolo alternative.

We often try to sync modulation effects to tempo, but here, the opposite tends to be more effective. The Uni-Vibe effect isn't rhythmically defined enough to reinforce a groove, and its charm tends to be strongest when the pulsations slice against the beat—or when the modulation rate is varied while playing via the foot controller. And after many years using Uni-Vibe-type effects without the original's foot controller, it's fun revisiting the initial concept, which brings the effect closest to its rotating-speaker inspiration. It also brings me to my one serious Nuvibe issue.

Tapering Off

The ideal range and taper of the all-important speed control (that is, how slow and fast it goes, and how quickly and evenly it transitions) is a matter of taste. Here, anything above the midpoint of the speed knob or foot controller is a hyper-fast flicker, while the slower, Leslie-like speeds are clustered in a relatively narrow segment of the pot's range. I kept wishing that the range were more restricted and the speed didn't accelerate so quickly. It's awkward, for example, to establish a slow modulation and vary it subtly—press a bit too hard, and you flutter like a hummingbird. Yet some players may be perfectly happy with the taper as is, and even a slow-vibe fan like me could probably get the desired response after a few hours of practice.

My only other beef is minor: Nuvibe adds an output volume control—a handy tool to correct for perceived volume changes when engaging the effect. Here though, the maximum setting is close to unity, and the knob only cuts level. It might have been nice to have the option of goosing the output, though the current scheme would be great for players who default to a high-gain sound, but want their tone to clean up when they slip into Nuvibe's sexy swirl.

The Verdict

It's easy to say who Nuvibe *isn't* for: fans of modern chorus sounds, players who lie awake at night calculating how to cram one more tiny Hotone or Mooer pedal onto their overpopulated boards, and of course, those who sensibly balk at paying five bills for a single specialized effect. But Nuvibe isn't about being sensible, and I adore its old-school attitude. It's a throwback to an era when guitar effects were weird, unruly, and enormous in every regard. You don't necessarily need a pedal this large, complex, and expensive to get great Hendrix-style Uni-Vibe tones, but you won't fine a more fun and tactile way of getting there, or a more musical and intuitive way to concoct cool new variations on that classic sound.

CLICK HERE TO WATCH A REVIEW DEMO of this pedal at premierguitar.com/may2015

RATINGS

Korg Nuvibe

$499 street
korg.com/us

Tones	5
Ease of Use	4.5
Build/Design	4
Value	4

PROS Superb Uni-Vibe-style chorus and vibrato. Cool control and customization options. Fun, fun, fun.

CONS Power supply not included. Speed control taper may not suit some players. Bigger than Tokyo.

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SUPRO 1648RT Saturn Reverb

By Joe Gore

The original Supro amps were produced by Valco and sold through department stores in the ’50s and ’60s. Despite their built-for-beginners status, these humble amps have often served as secret weapons for great guitarists, notably Jimmy Page during Zep’s early years. Supros lack the power of Marshalls and the rich, balanced tones of Fenders, but their explosive presence and rude overdrive have lent a punky edge to many great recordings.

Valco folded in 1968. But about a decade ago, famed amp designer Bruce Zinky revived the brand. The Supro name changed hands a few years ago, and now Dave Koltai of Pigtronix fame runs the show, releasing new Supro models while retaining many of Zinky’s innovations.

New Supros aren’t clones—they’re made from modern materials using modern manufacturing techniques. But don’t mistake them for generic amps with a bit of retro-cool window dressing. Consider the new Saturn combo: It’s not based on a particular vintage model, and its innards are strictly 21st-century. Yet it nails the unvarnished aggression of the best Supro combos while adding meaningful refinements. If you love the *Led Zeppelin I* sound, chances are you’ll dig this amp.

Vintage Modern

The U.S.-made Saturn is the smallest amp in the current Supro line, a single-channel combo with tube reverb and tremolo. It puts out 15 watts via a pair of 6973s—tubes found in many second-tier ’60s brands, and currently experiencing a bit of a renaissance. (The rectifier tube is a vintage-accurate 5U4.) Saturn’s solid-wood cabinet houses a 12" custom-voiced Eminence speaker. The amp’s controls are simple: volume, bass, treble, reverb level, and tremolo rate/depth. The knobs, logo, grille, and “rhino hide” vinyl provide an authentic ’60s look.

Inside is a different story: Parts are assembled on a pair of modern circuit boards, with board-mounted pots and jacks. (The components in old Supros are linked via terminal strip.) The boards are oriented at a 90-degree angle to each other, with some tubes pointing down toward the floor and other face inward toward the speaker, though they're all accessible without disassembling the amp. The transformers are custom-made to Zinky's specs.

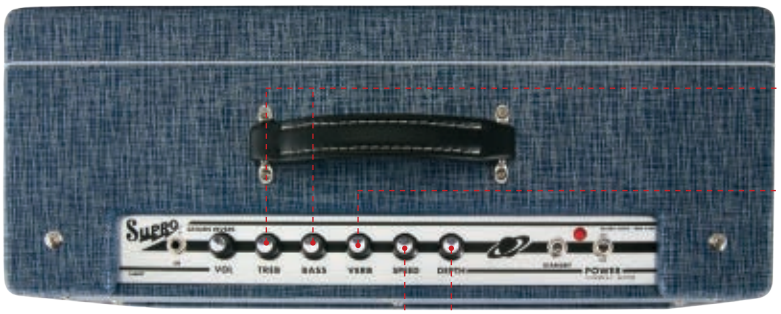
But despite its modern construction techniques, Saturn's creators seem to have designed the amp with reverence for the colors and quirks that make Supros special.

Biased for Badness

Like old Supros, Saturn is a cathode-biased "Class A" amp, and the trademark qualities of that architecture are front-and-center here. Tones are lively, responsive, and loose. Highs crackle with energy. The amp transitions to distortion at relatively low levels.

On the other hand, Saturn isn't particularly loud. It's definitely powerful enough to annoy your neighbors, but it may not be sufficiently beefy for gigs with aggressive drummers unless you have good monitors and a reliable sound person. You can pretty much forget about obtaining crystalline tones at anything more than modest volume. And while Saturn's lows aren't thin, they're hardly weighty—this amp doesn't do "chunk." (Actually, modern Supros tend to have noticeably stouter lows than original models, but still, don't expect to see many metal players using them. However, blues hounds, early Zep freaks, antique R&B aficionados, and indie troublemakers will probably relish this sound.)

For the players likeliest to cherish amps of this type, these traits are features, not bugs. Saturn doesn't thump like a Marshall or spank like a Fender, and that's part of the point. Instead, you get blunt, ultra-present attack and an attitude I can only describe as "snotty" (in the best possible punk-rock sense). Tones tend to feel *literally* in-your-face in that "Communication Breakdown" way. And recording guitarists will love how Saturn delivers high-octane overdrive at relatively low levels.



Set the Controls for... Whatever

Saturn's 2-band tone controls are limited but effective. The bass pot's taper is a bit odd—lows come on suddenly and strongly at around 10 o'clock, as opposed to easing in gradually. But chances are you'll just dial in a setting that suits your pickups and park it there. Meanwhile, like the best small Fender tweeds, Saturn boasts phenomenal dynamic response. Many users will simply turn the amp up till it growls and then scarcely touch the thing, sculpting tone via their hands and guitars. In fact, players of this persuasion are likeliest to dig Saturn the most.

For all the snippets in my audio demo (see the online version of this review), I simply set the tone controls at noon, advanced the volume 80 percent, and then scarcely touched the amp except to tweak the reverb and tremolo. I felt no need to alter the volume or tone settings, even when switching between the '63 Strat, '80s Les Paul, and Gretsch-like "parts" guitar heard in the demo clip.

Wet and Wobbly

A hefty, four-spring tank delivers gooey-good reverb. The tremolo is equally lovely, if quirky in a signature Supro way. It's relatively restrained—maximum settings throb, but never chop. Also, the response varies according to the volume settings.

Again, these are features, not bugs: As Dave Koltai explained to me, these traits are inevitable side effects of the Supro circuit, which employs output-tube tremolo, and whose modulation depth is limited by the cathode-bias architecture. Want to play an accurate cover of "How Soon Is Now?" Get a damn Twin Reverb. Meanwhile, I dig how Saturn delivers a cool variation on the familiar Fender flavor. You can toggle the reverb and tremolo via footswitch (sold separately).

The Verdict

Saturn delivers a great mid-century American sound in an authentic-sounding but technologically innovative way. Some might balk at spending $1,400 on a small, circuit-board amp, but Supro didn't simply clone some vintage circuit—Saturn's creators clearly invested much time and ingenuity in capturing a classic color while delivering such meaningful improvements as lower noise, greater bass response, and roadworthy construction. At this price, you could buy an original Valco amp—maybe more than one. But frankly, Saturn is likely to sound better than any of them, and it definitely stands a better change of surviving the stage and the van. It's a compelling option for guitarists seeking cool vintage tones from outside the Fender/Marshall/Vox axis. PG

PREMIER GUITAR PREMIER GEAR

CLICK HERE TO WATCH A REVIEW DEMO of this amp at premierguitar.com/may2015

RATINGS

Supro 1648RT Saturn Reverb

$1,400 street
suprousa.com

Tones	4.5
Ease of Use	5
Build/Design	4.5
Value	4

PROS Vibey Valco tones with meaningful improvements.

CONS Not cheap for a circuit-board amp. Footswitch not included.

Creamback

Vintage tone for the 21st Century

Developed almost 50 years ago, the Celestion Greenback remains an essential ingredient in the blues-rock guitar sound that burst out of the late '60s. Now comes the Creamback – a contemporary take on the Greenback recipe – all that unmistakable vintage G12M tone and the higher power handling necessary for a 21st Century stage.

Find out more www.celestion.com CELESTION

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at your Fingertips

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ENGL
Bass Rackhead 1060

By Jordan Wagner

The Rackhead 1060 is the first foray into bass amplification for Germany's Engl. Given the company's reputation for pinpoint engineering and robust design, it should come at no surprise that the Rackhead 1060 offers a wealth of features and connection options that will serve the needs of many a bassist onstage and in the studio.

Two-for-One Special

The Rackhead 1060 is essentially two bass amps—one with a tube-powered preamp and one with a solid-state preamp—in a two-space rackmountable package. The first amp specializes in warm, vintage tones via its 12AX7 preamp tubes, while the second preamp's solid-state circuitry delivers clear and punchy modern sounds. Each preamp feeds its own dedicated 350-watt class-D power amp. The amps can be combined for 700 watts of bone-crushing power. Thanks to a swap-preamp pushbutton, there's no need for a cable dance to switch between preamps.

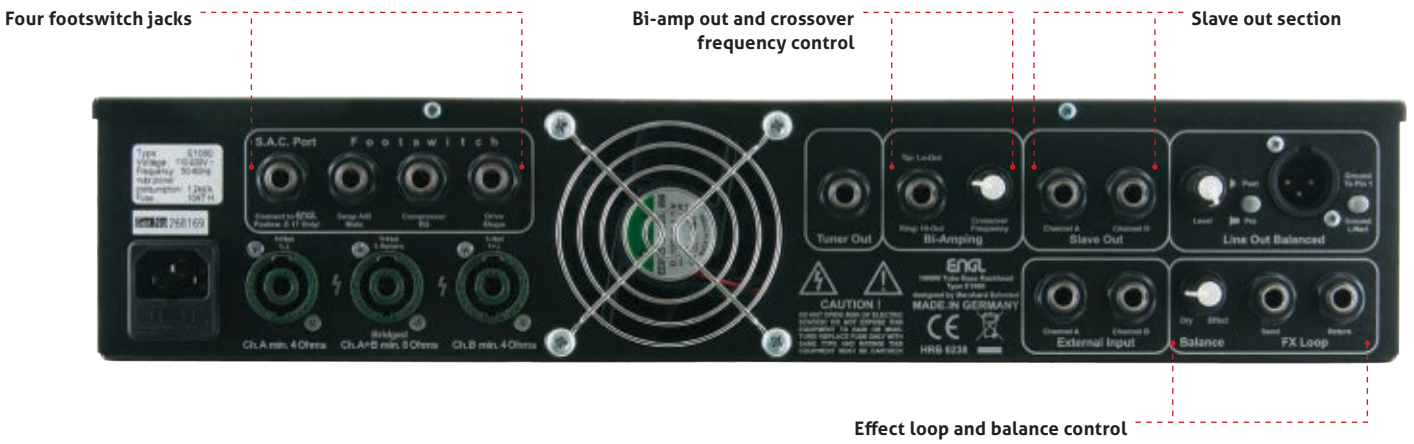
Each preamp's controls harness its particular strengths. The tube preamp's controls include gain, a switchable overdrive circuit with drive-level control, 4-band EQ plus presence, and pushbuttons for boosting lows, highs, and extreme highs. The solid-state preamp forgoes an overdrive circuit for a switchable midrange-contouring shape control. This preamp's EQ section combines bass and treble shelving with 2-band semi-parametric EQ for the upper and lower midrange. EQ can be engaged or bypassed via a front-panel switch, while another switch activates a built-in compressor for smoothing out the tone. Each channel has a -12 dB pad switch.

The rear panel includes three jacks for connecting footswitches to mute/swap preamp inputs, engage the compressor and EQ, or activate the overdrive and shape circuits, plus a fourth jack for connecting Engl's optional Z-17 master footswitch. There's also a serial effect loop with balance control, a balanced line-out jack, a tuner output, a bi-amp out with crossover-frequency control, and separate jacks for slaving out from each preamp.

Two Sides of the Same Coin

I paired the Rackhead 1060 with an Ampeg 8x10 using a pair of Speakon cables, routing the tube-preamp channel to the cab's top 4x10 section and the solid-state channel to four lower speakers. Plugging a Fender American Jazz into preamp A, I set the EQ controls to noon and the gain knob to 10 o'clock. The preamp's four 12AX7s generated warm, detailed tones with plenty of body and definition.

It was a great starting sound, but I wanted a bit more thickness in the mids and lows. The trick I use to achieve this with tube



Switching on the bass boost opened the sub-harmonic floodgates, releasing bowel-shaking lows that I felt almost as much as I heard.

amps is to push the gain a little higher than normal, and then roll the bass' volume control down slightly to remove unwanted grit. On the Rackhead 1060 this technique added a tubbier midrange thump while removing hi-fi edginess—perfect for old-school Stax R&B grooves.

The preamp's bright and ultra-bright switches are clearly intended for funkier slap and pop styles. That said, I felt the ultra-bright switch added a little *too* much emphasis to the attack and highs, making the tone a bit granular and edgy. Switching on the bass boost opened the sub-harmonic floodgates, releasing bowel-shaking lows that I felt almost as much as I heard.

Engaging the Rackhead's overdrive circuit added rich, snarling grit to the mids and highs. No, the overdrive circuit doesn't have tons of gain on tap, but its voicing helps the channel avoid oversaturation even at the highest drive-knob settings. Tones remain dynamic, punchy, and full, yet free from over-compressed lows and mids.

Fast and Fat

The solid-state circuitry of preamp B provides a decidedly different set of sounds. While not as warm and organic-sounding, its attack is much faster, and the additional EQ controls provide greater tone-shaping authority. With the input-gain and EQ knobs at noon, the tone has crisp highs, smooth lows, and rubbery mids, ideal for modern rock and country tones. Engaging the compressor—which is, unfortunately, not adjustable—and dropping the treble to around 9 o'clock yielded a rich, detailed sound perfect for blues and jazz grooving.

Note clarity and separation are absolutely over-the-top. I could play four-note chords without generating a jumbled mess, even after rolling down my bass's tone knob and dialing back the amp's treble. When I pushed the shape control past noon, tones maintained wicked precision with even greater aggression and power.

The Verdict

Engl's first bass amp embodies many of the qualities that have made the company well regarded among guitarists. The Rackhead 1060's versatile connection options let it adapt easily to most rigs. It's simple enough to master on the fly, yet its powerful controls and independent tube and solid-state preamps provide a wealth of tonal possibilities.

CLICK HERE TO HEAR this amp at premierguitar.com/may2015

RATINGS

Engl Bass Rackhead 1060

$2,199 street
englamps.de

Tones	4½
Ease of Use	4
Build/Design	3½
Value	4

PROS Two independent amps with tube and solid-state preamps. Copious clarity and power. Versatile connection options.

CONS Non-adjustable compressor. Ultra-bright setting can sound grainy. Expensive.

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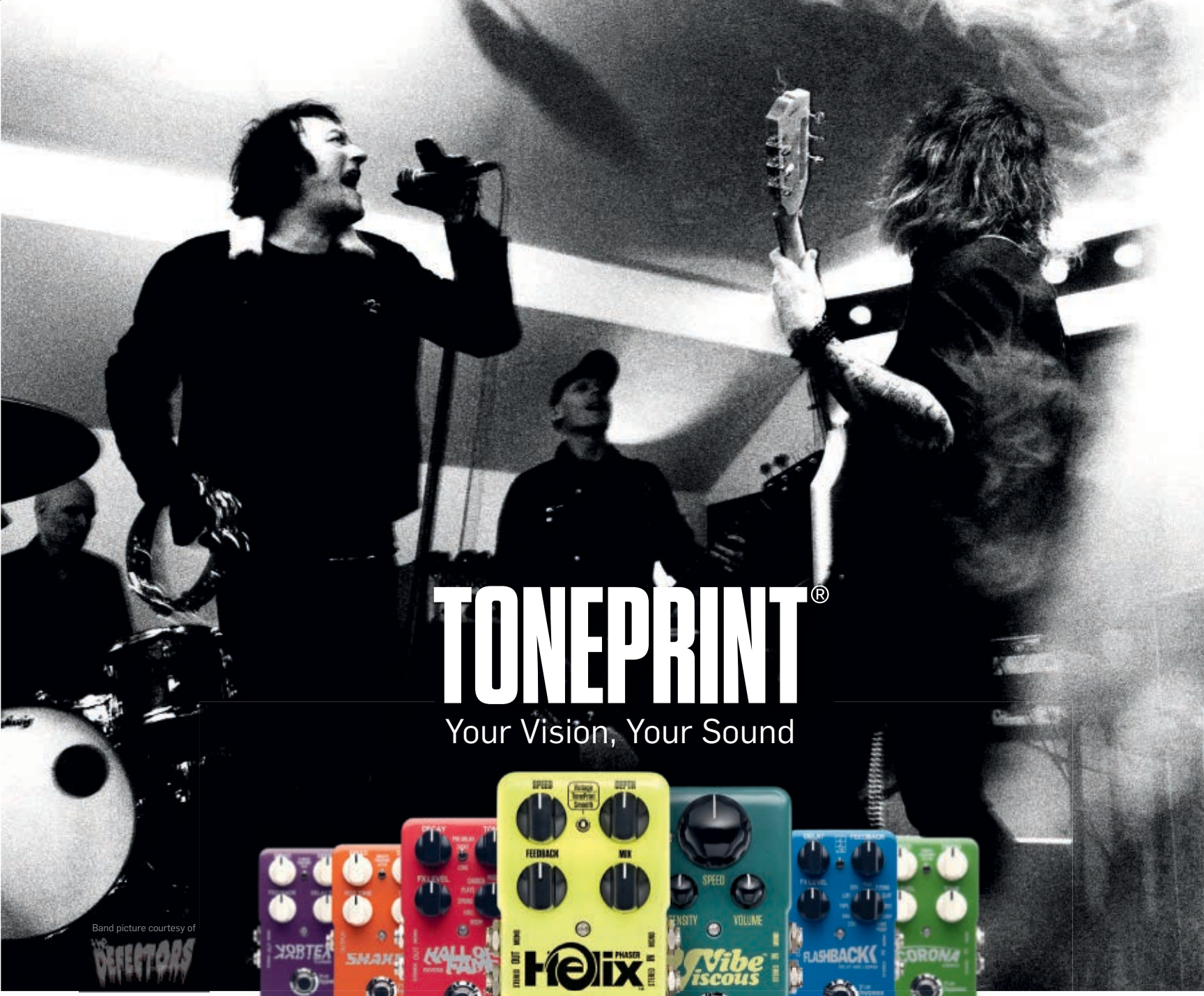

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RELISH
Jane

By Bryan Clark

Considering Switzerland's adventurous design legacy, you'd be forgiven for thinking that there's just something in those Alpine waters that feed Lakes Geneva and Lucerne. That would certainly explain the work of Relish Guitars founders Pirmin Giger and Silvan Küng. They are a decidedly retro-resistant duo, and the Jane manifests their fascination with nonstandard materials and unorthodox lutherie.

Multi-Material Approach

A solid aluminum frame forms the center and sides of the Jane, while the top and back are figured wood veneer—a lovely walnut that evokes fine Scandinavian woodcraft. (The Jane is also available in cherry and ash versions.) The 24-fret neck is quartersawn maple with a bamboo fingerboard devoid of ornamentation, and the smooth, beautifully integrated cutaway lets you easily access the highest notes. The guitar has the streamlined restraint of a haiku: It's elegant, it gets to the point, and it stimulates the imagination.

Turn the guitar over, and you'll notice two things: no visible neck joint, and a large, removable back cover plate secured by nine magnets around its perimeter. Once you pry away the cover with a pick or flathead screwdriver, you have access to the battery compartment, the four-screw, bolt-on neck-joint, and the bottom-through bridge for changing strings.

One of the Jane's most interesting design moves is replacing a standard pickup-selector switch with a flush-mounted, touch-sensor system below the volume and tone knobs. A pair of LEDs indicates pickup status. Other design moves are less

effective, however. The Schaller M6 mini-tuners are crammed closely together on the small headstock, especially the 4th- and 5th-string tuners. This makes tuning and restringing more difficult than it needs to be. And while others may disagree, I found the absence of a truss rod cover a little *too* minimalist.

Relish the Sound

How do such design innovations translate into playability? In most regards, the Jane is a great-feeling and highly playable guitar.

The action on the 650 mm-scale fretboard (that's slightly longer than 25.5") is nice and low, and there are no dead spots. The fretwork is excellent, with top-notch crowning and dressing and no hard edges. I played Joe Pass chord-melody lines, Zakk Wylde vibrato, big Albert King bends, and some Brent Mason cluck, and the neck always felt smooth and comfortable.

The under-wound, Swiss-made Good Tone Classic PAF neck pickup sounds thick and beefy, yielding great jazz and blues tones. The single tone knob conjures many colors, from bossy and in-your-face to midnight-dark. The hotter Good Tone Mr. Brown bridge pickup could be a bit more even from string to string, and it lacks the low-mid bump and smooth top end that many players like in a humbucker. Those who prefer an edgier-sounding humbucker, however, will feel very much at home here, and there's much tone potential in combining the dark neck pickup and bright bridge pickup.

Light Show

In the heat of performance, the control layout and LED pickup selectors don't always work as well as they might. The top's contour can obscure the player's view of the LED indicators. What's more, the volume knob blocks your view of the pickup-switch sensors. Additionally switching pickups can feel slow in some applications, and you can forget about playing switch-flicking licks like the one from Norman Greenbaum's "Sprit in the Sky"—the selectors simply can't respond quickly enough. Even basic switching between neck and bridge pickups is slower than a quick swat of a Telecaster or Les Paul toggle.

The Verdict

For the most part, the Jane boasts a cool and well-executed design. For many players, the touch-sensor pickup-switching system will prove slower than standard toggling. On the other hand, Relish's adventurous design translates into superb playablity, and the aluminum/laminate body may well contribute to the guitar's unique tone. The Jane is clearly a guitar for design-conscious players unafraid of deviating from convention, and Relish's imaginative spirit and high-quality execution are laudable, even if some innovations miss the mark.

CLICK HERE TO WATCH A REVIEW DEMO of this guitar at premierguitar.com/may2015

RATINGS

Relish Guitars Jane

$4,900 street
relishguitars.ch

Tones	4.5
Playability	4.5
Build/Design	3.5
Value	3

PROS Splendidly playable. Refined, elegant design

CONS LED pickup-selector switching feels clunky

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XOTIC XW-1

By Matthew Holliman

Late-'60s, Italian-built Vox wahs are among the most sought-after vintage effects, and can set you back considerably in cash, depending on the condition. For those of us who can't splurge on the real deal, there are plenty of cheaper options that capture the vintage vibe and add modern functionality that vintage units can't match. One of the newest contenders is Xotic Effects XW-1, a relatively featherweight and compact unit that's sonically derived from the original Clyde McCoy wah but adds a whole lot more tone-shaping versatility.

Smaller Size, Huge Control

The most readily noticeable deviation from traditional wah design is the XW-1's small size. Xotic says it's about 20 percent smaller than most conventional wahs, and it certainly feels unusual underfoot at first. Regardless of proportions, the construction is exemplary and the layout is smart. Four small pots on the right side of the unit adjust bias, wah Q, and +15 dB for both treble and bass. Turning up the bias control tightens bass response and increases overall output. Wah Q widens or narrows the filter peak within the pedal's sweep.

Removing four bottom-plate screws enables access to the 9V battery adapter and four additional frequency-shaping controls. A little red box mounted to the PC board is home to four DIP switches that modify toe-down range, input gain, presence cut, and wah-Q frequency. Activating the toe-down DIP adds emphasis to high frequencies. Presence cut has a smoothing effect on high end. The wah-Q DIP gives the more vowel-like parts of the sweep a deeper, heavier feel and tone that can turn into a guttural growl with the right combo of humbuckers and gain. The input-gain DIP, meanwhile, boosts output by up to 6 dB.

Gold-contact relay-bypass switching prevents the nasty activation click that curses many effects. Foot-treadle tension can be adjusted with the side-mounted hex nut, and the sweep range can be altered with the screw mounted on the bottom heel of the footpad. Oh yeah, there's an LED indicator too—a feature that's inexplicably rare on wahs and which, in this case, earns the Xotic designers big bonus points and thanks from gigging players.

Rockin' the Block

Throwing the XW-1 into the melee of a band rehearsal was a great test of its malleability. When I paired it with an Orange OR50 and a Fender Stratocaster, output dropped a touch upon engaging the wah. So I unscrewed the footplate and twisted the internal trimpot a third of a turn. While that setting worked great for single coils, when I switched to my Gibson Les Paul, I wanted less output. Needless to say, it left me wishing that the control was mounted externally. Thankfully, you can use the external bias control to reduce or boost the output a touch, but it does affect the tone considerably.

The XW-1 is designed to best approximate a vintage Vox Clyde McCoy model with all the external controls at noon. Having never played one of these coveted relics, I can't say how effectively it replicates the minutiae of a Clyde's performance. However it has the very round, vocal voicing that makes the original Clyde a subject of gearhead lust in spades.

Placing an Analog Man Sun Face (a Fuzz Face clone) after the XW-1 proved to be a killer combination for generating wide-open Hendrix wail, but these "traditional" wah applications are just the beginning of what the Xotic can do.

Besides the physical responsiveness of the unit, the changes to frequency response available via the wah-Q control can be profound. At times I had to adjust my regular wah motion to accommodate for the extra vocal range, but that extra range opens up a ton of possibilities. Major setting adjustments change the feel of the wah considerably. For instance, if you're used to finding your classic, half-cocked SRV tone at the treadle's halfway point, you'll have to rethink your phrasing and be a lot more surgical about your pedal throws. But curious tinkerers will be rewarded with enhanced expressiveness and a tone palette that will keep you well out of the same-old-wah-moves rut.

Through the course of testing, I usually left the XW-1's presence-cut DIP switch engaged. Interestingly, though, I found the combination of my Les Paul and Fender Twin Reverb much more expressive with it on. Single-coils, for obvious reasons, benefit the most from the presence cut control, especially with the Stratocaster's bridge pickup driving a fuzz and an Orange amplifier set for brighter output.

The Verdict

The Xotic XW-1 is one of the most versatile wah pedals I have ever laid foot upon—it sounds fantastic. With controls for shaping and fine-tuning nearly every frequency that ever made a wah a joy (or wonderfully unruly), it can go from glass-shattering highs to swampy lows, and everything in between. And the extent to which you can tailor it to your rig is both impressive and potentially invaluable. Its price tag is fairly substantial, but it's still in line with great boutique wahs by RMC and Fulltone, to name a few. My only issues with the design were that the input-gain trimpot isn't accessible on the fly, and that the small footprint can feel a little odd at first. Everyone is trying to economize space on their pedalboard these days, but there's something deeply satisfying about having a big ol' chunk of metal underfoot to control my wah whimsy—or maybe I just have big feet. But my ears don't lie, and the Xotic XW-1 sounds positively amazing.

CLICK TO WATCH A REVIEW DEMO of this pedal at premierguitar.com/may2015

RATINGS

Xotic Effects XW-1

$236 street
xotic.us

Tones	4.5
Ease of Use	4
Build/Design	4.5
Value	4

PROS Superb tone-shaping control. Very fuzz friendly.

CONS Internal input-gain trimpot can't be adjusted on the fly.

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Photo of: Noah And The Whale

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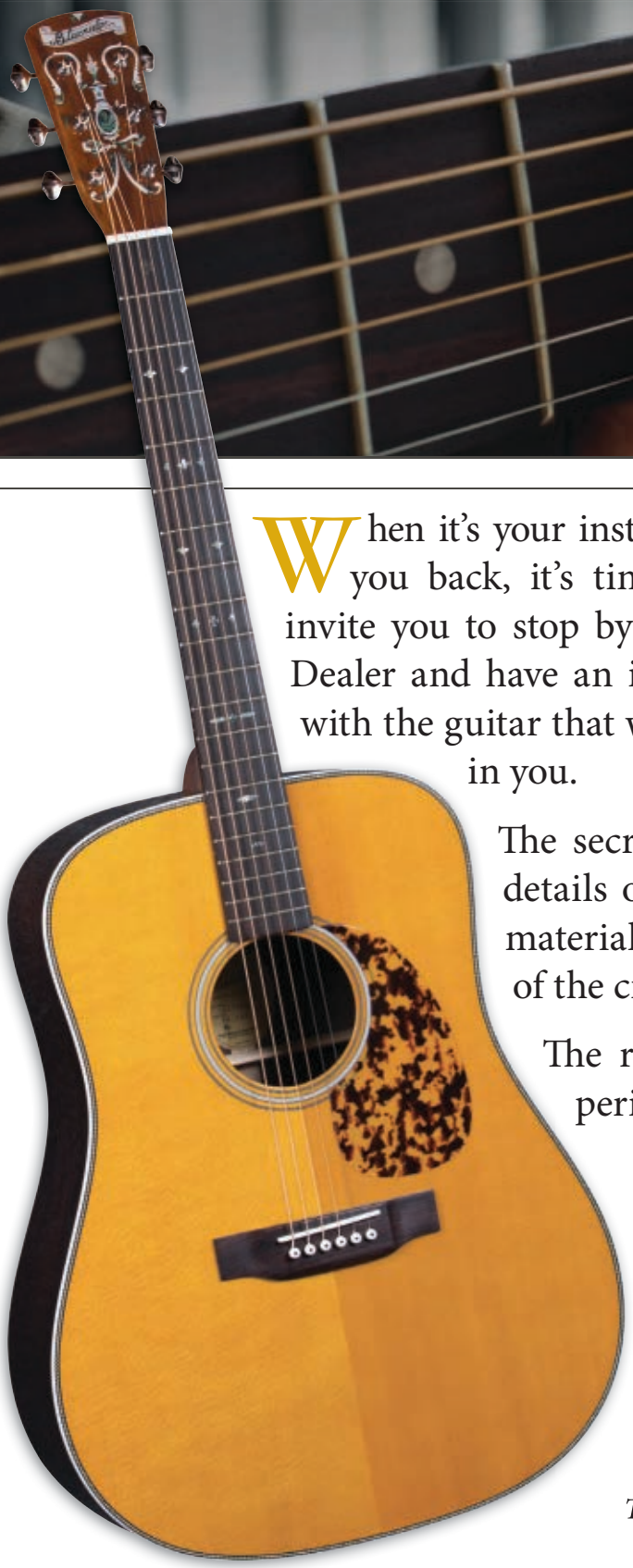

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DV MARK
Maragold

By Joe Charupakorn

With an artist roster consisting of monster jazz and fusion guitarists (Frank Gambale, Biréli Lagrène, and Dean Brown among them) DV Mark has acquired a reputation as a serious player's brand. Now the company has collaborated with fusion-shred virtuoso Greg Howe to produce the signature-model Maragold—a 40-watt, EL34-driven, 2-channel amp that runs from subdued to fire-breathing.

Ready for the Road

The Italian-made Maragold is a relatively compact affair, stuffing two EL34 power tubes, an additional ECC83 power tube, and three ECC83 preamp tubes into a 27-pound head. There are other features that seem designed for touring musicians: The handle is on the right side of the amp rather than the top, which makes loading and carrying easier. There are also rubber feet on the side opposite the handle (as well as the bottom) so the amp can be situated horizontally or vertically—nice for cramped stages. A dual-voltage switch ensures that you won't encounter power issues when touring abroad.

The front panel is straightforward: Each channel has bass, middle, high, gain, and master controls, and there's a global presence control. The large DV Mark logo shines bright green when the clean channel is on, and red when you're playing the overdrive channel. The lights are also visible through the exposed vent on the amp's left side.

Hitting the Mark

I tested the Maragold with an Ernie Ball Music Man Axis Sport and a Mexican Fender Strat through a DV Mark Neoclassic cab (which, at 27.3 pounds, is one of the lightest 2x12 cabs I've come across). On the clean channel with the EQ knobs and gain at noon, the sound was rich, meaty, and midrange-heavy. The extra mids don't make the amp particularly sparkling or crisp, but its tones are exceptionally warm.

Maxing the gain on the clean channel adds depth and just a touch of crunch. Here you notice the Maragold's sensitivity to picking dynamics. Even with the gain wide open I could shade tones by varying my attack. Strumming hard yielded great gritty tones for open and barre chords. Fingerpicking with a softer attack sounded clean but lively.

Oddly, given DV Mark's focus on practical design, no channel-switching footswitch is included, though any two-button latching footswitch should work. And of course, you can switch via the front panel's mini-toggle.

Like the clean channel, the lead channel is remarkably touch-responsive. You can move from brutal to bluesy via the intensity of your pick attack.

Big Red Roar

The lead channel is where the Maragold really roars. I initially set the EQ knobs at noon and the gain around 9:00. Even this relatively low-gain setting sounded monstrous for everything from hot Larry Carlton-style leads to blazing shred tones once I put the Music Man's humbuckers in the mix. With the gain advanced to about 1:00, the Maragold still maintained amazing note-to-note clarity. Even in streams of hammer-ons and pull-offs, individual notes were clear and massive. Long legato lines were a little less clear at these settings, but only comparatively so—in general, single notes shine and remain distinct.

Like the clean channel, the lead channel is remarkably touch-responsive—you can move from brutal to bluesy via the intensity of your pick attack. Even high-gain settings retain great note separation for harmonically dense chords. (A13♭9 sounded remarkably rich and detailed!) This channel is also highly responsive to guitar volume knob changes. With the guitar's volume knob lowered to about 8, the Maragold sounds less like a raging stack than a cranked tweed. Lowering the guitar's volume to about 4 make things clean enough for funk-jazz tones, even when digging in hard.

Overall, the lead channel is well balanced, if a bit dark and smooth. And even when exploring EQ extremes—the high knob at full, and the bass and mids scooped entirely, for instance—the output remained musical.

The Maragold lacks built-in reverb, but the sounds I got through the closed-back cab were resonant and three-dimensional. As much as I love reverb, I didn't miss it here. There are effect send and return jacks in the back with a 0/-15 dB selector switch, though you need a footswitch to activate the loop, and again, the amp doesn't come with one.

The Verdict

While the DV Mark Maragold is ideal for fusion players, its broad, adaptable personality translates to almost any application. This amp doesn't make you adapt to its characteristics—it provides a blank canvas that you can color to suit your style.

CLICK TO HEAR this amp at premierguitar.com/may2015

RATINGS

DV Mark Maragold Greg Howe Signature head

$899 street

(Neoclassic 2x12 cabinet $569 street)
dvmark.it

Tones	4.5
Ease of Use	4.5
Build/Design	4.5
Value	4.5

PROS Versatile range of sounds. Touch-sensitive and dynamic. Light and compact.

CONS Footswitch not included. No reverb.

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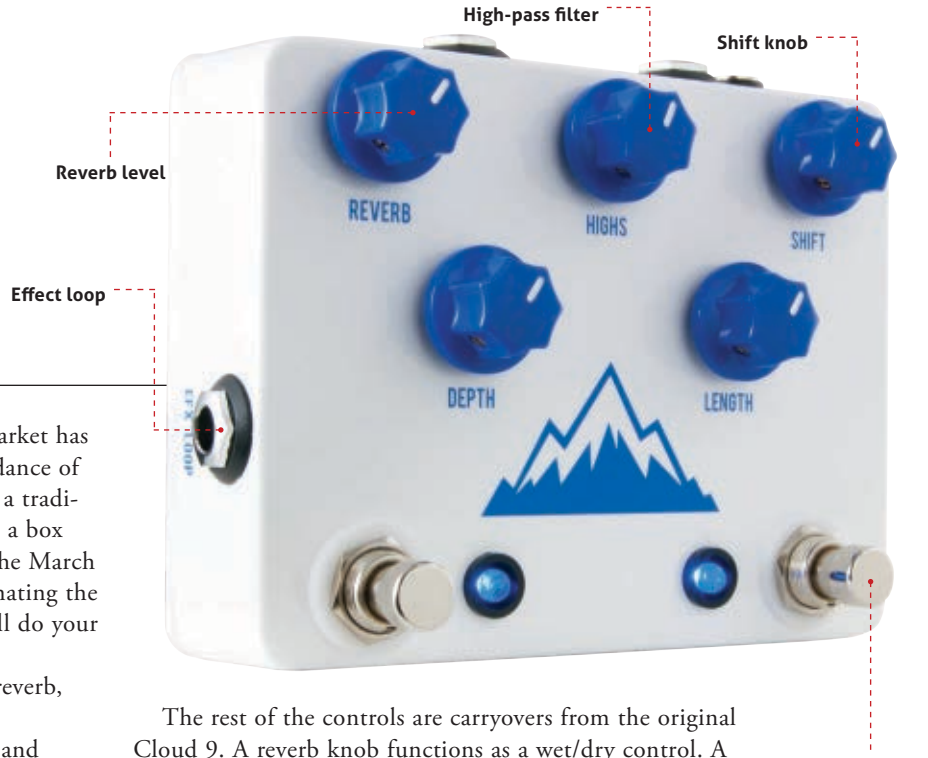
JHS Alpine

By Charles Saufley



Over the last half-decade the reverb pedal market has bloomed—exploded even—with the abundance of a French garden in spring. Whether you're a traditionalist trying to nail the sound of spring reverb in a box (see our "Spring-Reverb" pedal review roundup in the March 2015 issue) or an ambient seeker sonically approximating the space of light years, there's probably a pedal that will do your bidding.

JHS's Alpine isn't the most expansively ambient reverb, nor does it do the most dead-on spring emulations. What it *does* provide, often brilliantly, is a practical and musical "in-between" reverb that unites spring reverb's electromechanical splashiness with digital's expansiveness. Its dual-mode "shift" functionality lets you switch between extreme and mellow reverb levels, and a simple effects loop makes it easy to expand the pedal's sonic range.

Sourced From The Clouds

The heart of the Alpine is derived from Sky Pedal's Cloud 9 reverb—a design that Sky Pedal founder Jim Coleman made available to JHS when he left the pedal business. JHS's design tweaks aren't numerous, but they enhance the functionality, especially in the case of the new depth control, which modifies the reverb's spaciousness. The other significant addition is an effect loop, which works via a 1/4" TRS splitter cable. The loop is a simple way to add dimension and texture to the reverb without affecting your dry signal. Better still, it can be assigned to the shift switch, which we'll discuss in a minute.

This near-dummy-proof design can create radical textures and dramatic moments when used creatively.

The rest of the controls are carryovers from the original Cloud 9. A reverb knob functions as a wet/dry control. A highs knob controls the high-pass filter. A length control sets decay time. Meanwhile, a fourth control—the shift knob—acts as a sort of simple preset control. It's essentially a second reverb-level knob assigned to the right footswitch, letting you switch between drastically different reverb levels on the fly. Additionally, there's an internal switch that allows you to assign the effect loop to the shift switch exclusively, enabling even greater differentiation between the two reverb sounds.

The Alpine is a well-built unit. The PC board is tidy and organized so that you can extract a faulty switch or DC jack without disassembling the entire unit or removing the board.

Up In the Thin Air

There's something inherently agreeable about the Alpine's voice. When the wet/dry mix is 50/50 or less, the reverberations possess an analog-like smoothness that could pass for amp or tank reverb in a band setting or studio mix. Wet/dry settings above noon betray traces of digital artifacts akin to soft repeats on a digital delay, especially when the depth, length, and high controls are in the upper third of their ranges. That said, the Alpine sounds less coldly "digital" than a number of other well-regarded digital reverbs around our studio.

If you like long, airy reverb tails, your best bet is to keep the wet/dry mix around noon and get daring with the repeats, highs, and depth. Sounds at these settings are the Alpine's forte, straddling a cool line between the metallic liveliness of a reverb tank and the airy, harmonically even ambience of a good digital reverb. The pedal shines onstage at such settings, providing much atmosphere without getting overbearing.

The shift control is a potential asset when playing live. It's not a preset in the sense that it recalls an entire group of settings—it only affects the reverb level. But this near-dummy-proof design is easy to manage in the heat of a performance, and it can create radical textures and dramatic moments when used creatively.

Seeking the most extreme shift settings, I tinkered with the ringing oscillation obtained with highs, length, and depth at high settings. At lower wet/dry mix levels, these tones have a pretty, not-too-sci-fi ambience. They create a beautiful wash beneath arpeggios and slow-burn leads, though the sounds also work with dubby reggae, snappy funk rhythms, and chugging shoegaze strumming. With the shift switch set to a wet reverb mix, the self-oscillating effect can provide killer punctuation for a solo or pepper a jam interlude.

The Verdict

In a reverb stompbox market awash with extreme variations on the effect, the Alpine focuses on the basics—and that's a good thing. Players that *need* those extreme textures probably won't find a lot to love here, but those who favor a mellow reverb approach—or dabble in shoegaze, surf, or rockabilly—will appreciate the Alpine's lovely, soft-contoured echoes, the snappiness of its useful high-pass filter, and the shift switch's ability to add a kick to a solo. Meanwhile, those who need their reverb to go further out can use Alpine's effect loop without altering the dry signal.

One sticking point is price: $249 is a lot for a digital reverb without true presets, modulation, dead-on spring emulations, or other options for deep ambient textures. On the other hand, gigging guitarists are likely to appreciate the Alpine's smooth sound, simple yet expressive mode switching, and overall high quality.

CLICK TO WATCH A REVIEW DEMO of this pedal at premierguitar.com/may2015

RATINGS

JHS Pedals Alpine

$249 street
jhspedals.com

Tones	4.5
Ease of Use	4.5
Build/Design	5
Value	3

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CONS Expensive.

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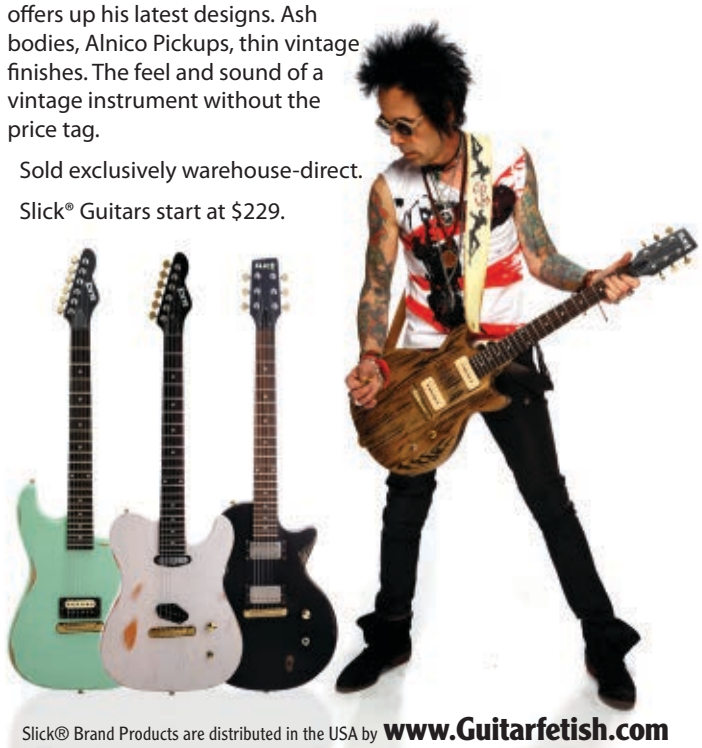

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KEELEY
Bassist Compressor

By Steve Cook

Bass pedals have of course been around for years, but recently, some of the more notable guitar-pedal wizards have been dabbling in the bass pedal game. Keeley Engineering's Bassist Compressor is a fine example. Keeley has always been perceived as a pro's pedal builder. And when Robert Keeley's compressors were introduced more than a decade ago, they quickly became a common sight on pedalboards. With a simple design and superb transparency, the Bassist could very well see the same success.

It's easy to like the Bassist. It's quiet, it doesn't color your tone, and it's got great clarity, which makes it a great friend for the studio.

Pressed into Service

Compression for bass works on that same principles as any other audio compression. Essentially it evens out your signal by kicking in when you push it too hard. You set the threshold to determine when compression will kick in, and the ratio to determine how much compression you want. Using a compressor assures even tone for hard players, keeps your signal from peaking, and can prevent you from damaging gear with dB spikes. And depending on how you apply it, it can increase sustain or add potency to your signal.

The Bassist's heart is a THAT Corp. 4320 "Analog Engine" integrated circuit. The 3-knob design is as straightforward as a compressor can be. The first control sets the compression ratio, which ranges from 1:1 to infinity. The threshold control in the center has a very wide range to help tame spikes in volume, and the gain control regulates volume between the pedal's engaged and off positions.

Color Me Compressed

The Bassist is a very quiet pedal and can handle hot signals, so it's equally suited for active and passive basses. I checked it out using both an active Warwick Streamer and a passive Fender Jazz through an Aguilar Tone Hammer 500 and matching SL 112 cabinet.

The green LED indicator light below the threshold dial lets you know the Bassist is powered up, and the blue LED above

the threshold knob lights up when the pedal is engaged via the true-bypass footswitch. I set the threshold right at the point where the green LED started turning red, which alerts you that compression is being applied.

A good starting point for the pedal compression ratio was 4:1 (noon on the dial). Here the bass still breathes and doesn't sound too cramped or unnatural. The setting also tamed harder-hitting riffs, which allowed me to dig in at will. Dialing the ratio to 5:1 is a great set-and-forget position for slap bass, which tends to generate more peaks than fingerstyle playing. And the 10:1 ratio works for serious heavy hitters and slap players or synth-type bass tones. Impressively, the bass continued to sing at a 10:1 ratio without totally killing my tone or vibe.

To employ the Bassist as a limiting amplifier, I simply set the threshold dial with the help of the indicator light, and cranked the compression to infinity. Voilà: The pedal became a hard-knee limiter. Yes, the tone was noticeably squashed with loss of presence and punch, but that's the trade-off when using such an extreme setting on the limiter and I wasn't going to blow any speakers. It's a good feature to have.

Another nice bonus is that by dialing the compression to a 1:1 ratio and set the gain higher than the amp-matched volume, you've got as much as +20 dB of boost to work with.

The Verdict

It's easy to like the Bassist. It's quiet, it doesn't color your tone, and it's got great clarity, which makes it a great friend for the studio. It's easy to use and forgiving too. Bass compressor pedals are nothing new, but when one of the industry's more respected compressor-pedal manufacturers brings one to the table, it's impossible not to take notice—in the case of the Keeley Bassist, it's worth the attention. PG

CLICK TO WATCH A REVIEW DEMO of this pedal at premierguitar.com/may2015

RATINGS

Keeley Basssit Compressor

$ 199 street
robertkeeley.com

Tones	●●●●◐
Ease of Use	●●●●◐
Build/Design	●●●●◐
Value	●●●●○

PROS Super easy to dial in. No noticeable tone coloration or sustain issues.

CONS If you have one, let me know.

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Question & Obsession

It's the hot-rod issue, so we asked Ethan Tufts of Strymon Engineering to join us in talking about what kind of effects we'd like to put you know where.

Q: *Which onboard effect(s) would you install in a spare guitar?*

Ethan Tufts

Guest Picker

A: Not sure I'd want effectsinmy guitar, but I'd absolutely love to have wireless remote control of my pedalboard directly from my guitar, maybe via MIDI. Knobs on my guitar for expression control of any pedal setting would be insanely cool.

Current obsession:
Using ridiculous amounts of warbling, nearly seasick vibrato to make my guitar sound like it's playing back from a waterlogged VHS tape. Instant '80s nostalgia—and a way to distract from my ham-fisted playing.

Johannes Burger

Reader of the Month

A: I have a project going at the moment—Hannah Montana Washburn with an infamous Heavy Metal 2 circuit installed into it (I'm a pedal builder/ circuit designer). I think I'll refinish it in white, blood splattered/smeared, and call it "Johannah Montana."

Current obsession:
Buying the cheapest and most sneered upon horrible distortion pedals and using them with all knobs on full. So bad it's good.

Andy Ellis

Senior Editor

A: I bought a new MIM Fender Tele to house a Fernandes Sustainer system. The humbucker-sized Sustainer driver popped right into the Tele's neck humbucker cavity, and I replaced the stock single-coil bridge pickup with a stacked Duncan humbucker. "Skully" is my first choice for Fripp-inspired overdubs.

Current obsession:
John Mayall's Bluesbreakers—*Live in 1967.* As a Peter Green freak, I've collected everything from his Bluesbreakers and early Fleetwood Mac days, including lots of live bootlegs. But this new release—featuring Mayall backed by Green, John McVie, and Mick Fleetwood—contains 13 tracks I'd never heard before. Green is on fire, and his fat, searing Les Paul drives the London club audiences berserk.

Joe Gore

Senior Editor

A: Hate to be a party-pooper, but unless you want to plug into the wall or change your battery every hour, you need something with low-current draw. My fave choices are single-transistor overdrives with input capacitors tuned to suit the guitar. Properly voiced, these circuits can go from ferocious fuzz to a crispy, clean sound indistinguishable from bypass—just by twisting your volume knob.

Current obsession:
"Rope-core" strings from Thomastik-Infeld or John Pearse on a classical guitar. They let you tune low or bend notes like on a steel-string. They can sound as sweet as nylon, but can get far more aggressive. But ouch—they're incredibly expensive!

Shawn Hammond

Chief Content Officer

A: I'd love to have a Korg Kaoss Pad, or an analog delay and a DigiTech Whammy. Some sort of crazy-ass, lo-fi arpeggiator would be pretty cool, too.

Current obsession:
Trying to keep time like an uptight robot without sounding like an uptight robot ... except when prissy-droid vibes are called for.

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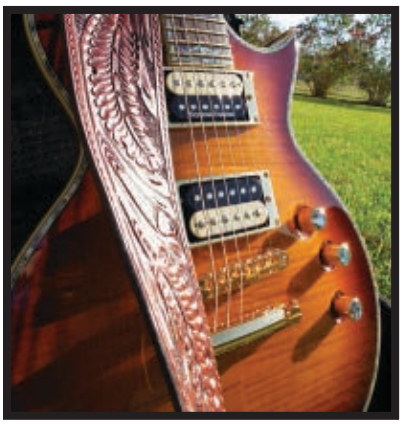
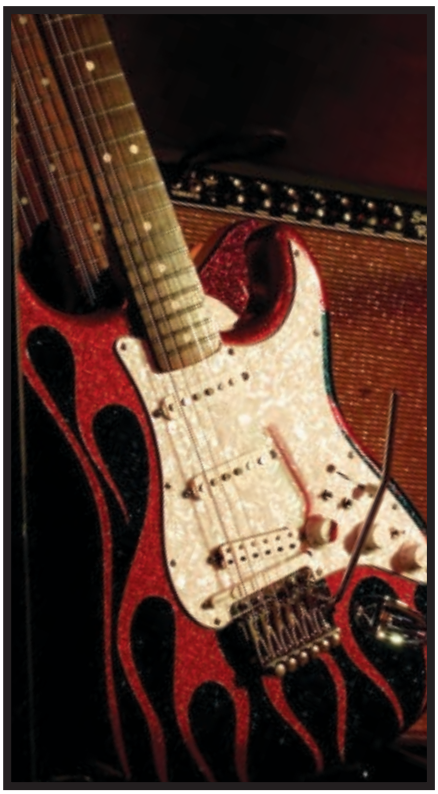
READER Hot Rods

Throughout the year we collect stories and photos of guitar-mod projects created by you, our dear readers. Some are so inspiring that we include them here in our annual Hot Rod issue.

BJ Byers

"Here are a few pictures of my modded ESP EC-1000 Deluxe," writes BJ Byers. "I considered upgrading to a nicer guitar but was so attached to my ESP that I decided to upgrade the guitar instead. I changed all the hardware—including the fret wire—to gold, with abalone accents on the knobs, which makes the amber sunburst finish look amazing." The guitar also underwent an electronic makeover: The pickups are Duncans (a '59 at the neck and a Pearly Gates at the bridge), wired with three push/pull knobs for coil splitting, series/parallel routing, plus a volume kill switch. "It sounds and plays like a dream," Byers says.





Danny Carr

Danny Carr of San Jose, California, says this sparkle-flamed beauty started out as a 2004 Roland Ready Strat. "Aside from the wood, frets, Roland circuit boards, and hex pickup, there's not much left that's original," notes Carr. The new neck and middle pickups are single-coil GFS Vintage Staggers (neither is reverse-wound), while the bridge is a Duncan Li'l Screamin' Demon humbucker. The pickguard is from Pickguard Heaven, the pearloid-knob tuners are by Schaller, the locking whammy system is by Super Vee, and Willies Rod and Kustom Car Shop of Campbell, California, provided the glorious paint job.

The electronics are equally ambitious: Switch 1 is a standard 5-way pickup selector. Switch 2 activates the bridge pickup (providing seven possible combinations from the non-synth pickups). Switches 3 and 4 control the synth pickup, and a push/pull tone knob houses a fifth switch to toggle the humbucker between series and parallel mode. "For 16 years I've played in a classic-rock cover band, which means I have to cover a ton of sonic territory," says Carr. "With the mods on this guitar, there's not much I can't do."

Carlos Contreras

"My Les Paul SG has a handmade paint job inspired by Clapton's 'The Fool' SG," he says. "It has flower-like inlays in addition to the ones that already come with the guitar. The Strat is a MIM Standard in agave blue, with the pickups modded to make them sound like humbuckers." Both guitars have replacement bridge pickups from Seymour Duncan under the original pickup covers.

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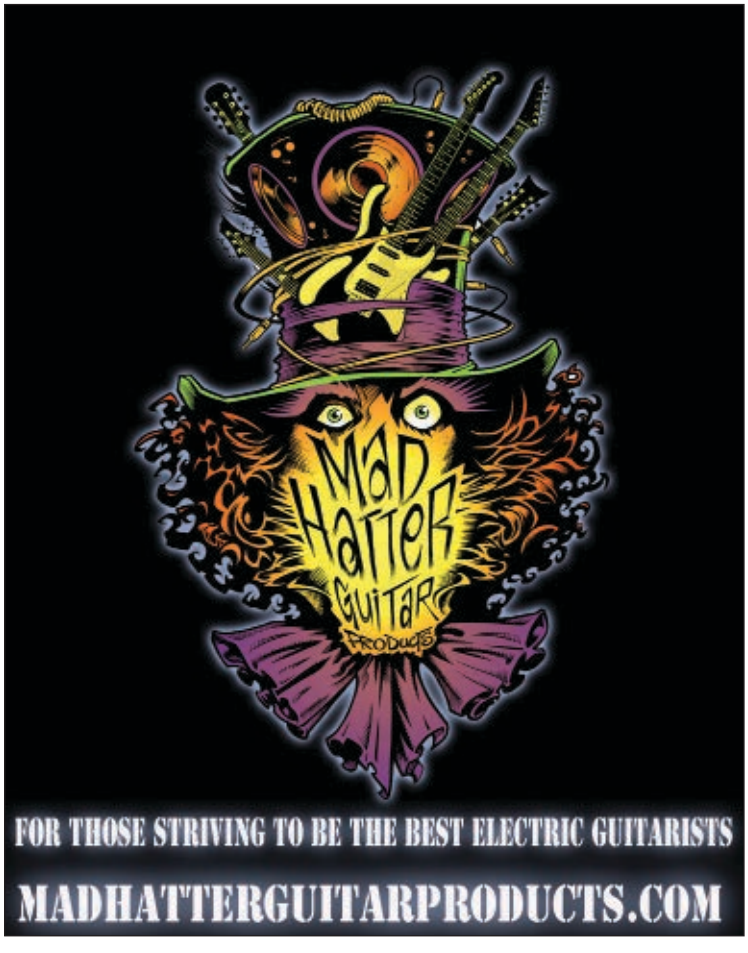
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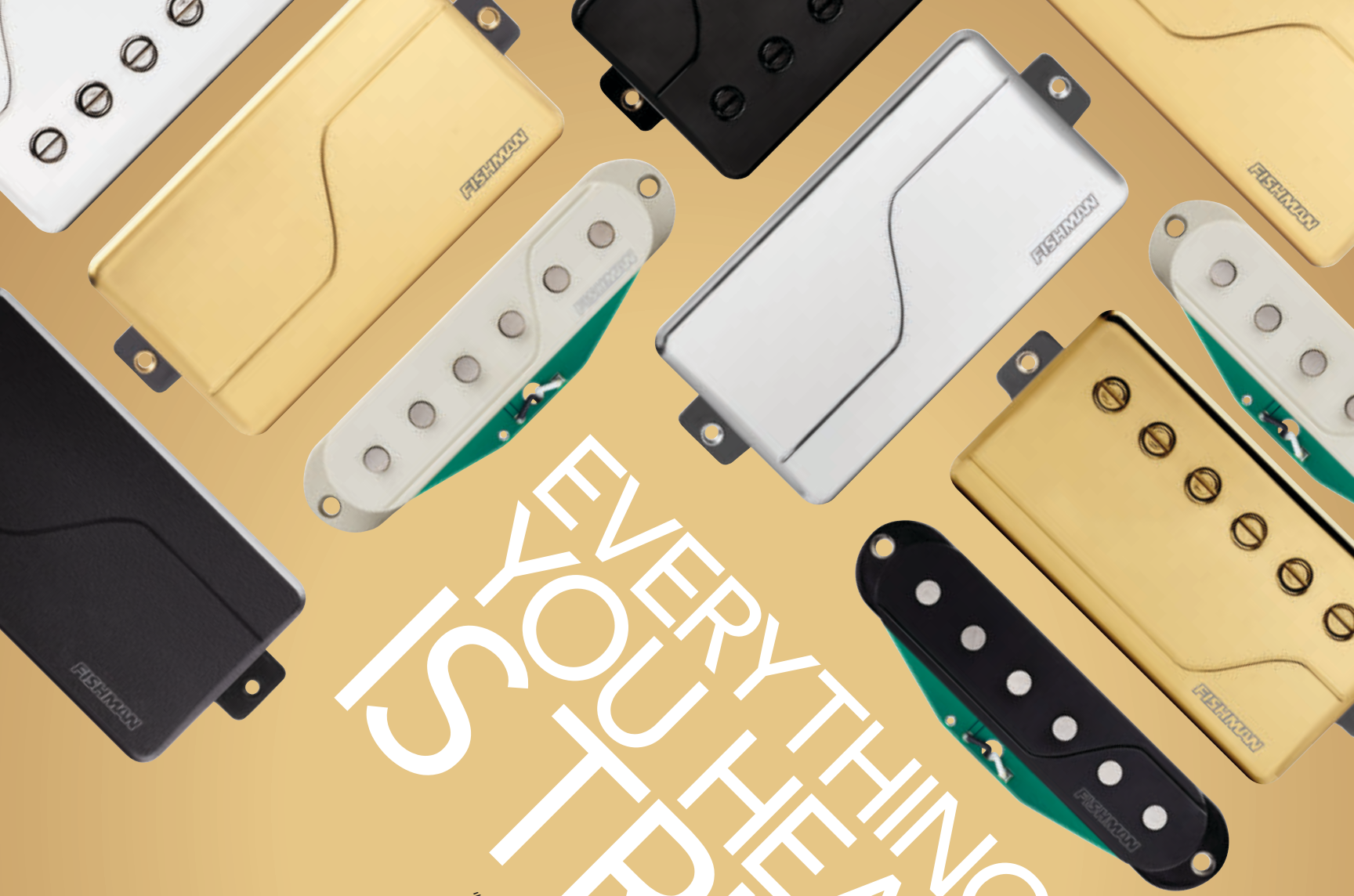
Tommi Aaltonen

Tommi Aaltonen created this 3-string from a special box: "As a child I used it as a rock-collection case," he says. "Now it's rocking with three strings tuned to open G." Aaltonen made the neck from an old table leg, while an upside-down steel pot lid serves as a resonator. The soundholes are also fashioned from kitchenware, while the knobs were scavenged from an old tube radio. "I had a blast building this beauty," says Tommi. "It has a nasty, springy tone."

Dan Bontrager

Before acquiring its celestial finish, Dan Bontrager's Ibanez JS700 had a standard red-stained mahogany body. "I picked it up from Craigslist, and it was in poor shape," he says. Bontrager and a buddy rebuilt a routed-out bridge pickup cavity and stripped the original finish before applying a large-flake glitter coating. "The process was very low-tech," reports Bontrager. "Spray clear, dump the glitter on, repeat. Finish with about 20 layers of clear, and then buff." Dan says it's a heavy guitar thanks to all that varnish, but that it sounds great with its GFS P90s. "Best of all," he confides, "you can blind everyone at a gig with only a single 60-watt light bulb."



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– Ryan Mendez, Yellowcard

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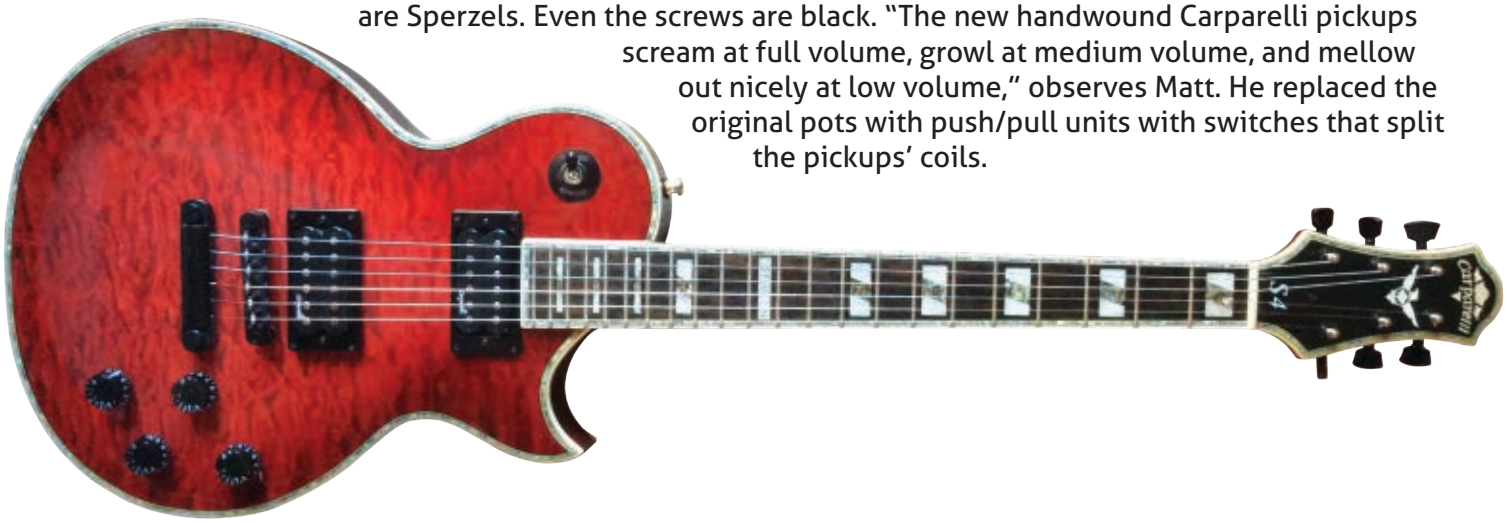
scott bennett

Greenwich, Connecticut's 812 Guitars made this double-cutaway axe for Scott Bennett, lead guitarist for the band Awaken. It boasts a one-piece roasted quartersawn maple neck (with reverse headstock), a one-piece alder body (with the words "Olde School" carved in), direct-mounted DiMarzio Tone Zone and Air Norton pickups, Hipshot tuners, and brass hardware. "It sounds like a Les Paul but weighs in at under seven pounds," reports Bennett. "It plays incredibly well and sounds *ballistic!*"

matt west

Sometimes hot-rodding a guitar makes it look *less* showy, as with Matt West's customized Carparelli S4. "It was a decent Les Paul-style guitar, but I wanted to improve its looks," says West. "The original had moderate-output generic humbuckers and all gold accessories, which looked too gaudy against the red quilted-maple top. I bought handwound pickups and replaced all the gold hardware with black." The new tailpiece and roller bridge are solid brass. The new tuners are Sperzels. Even the screws are black. "The new handwound Carparelli pickups scream at full volume, growl at medium volume, and mellow out nicely at low volume," observes Matt. He replaced the original pots with push/pull units with switches that split the pickups' coils.



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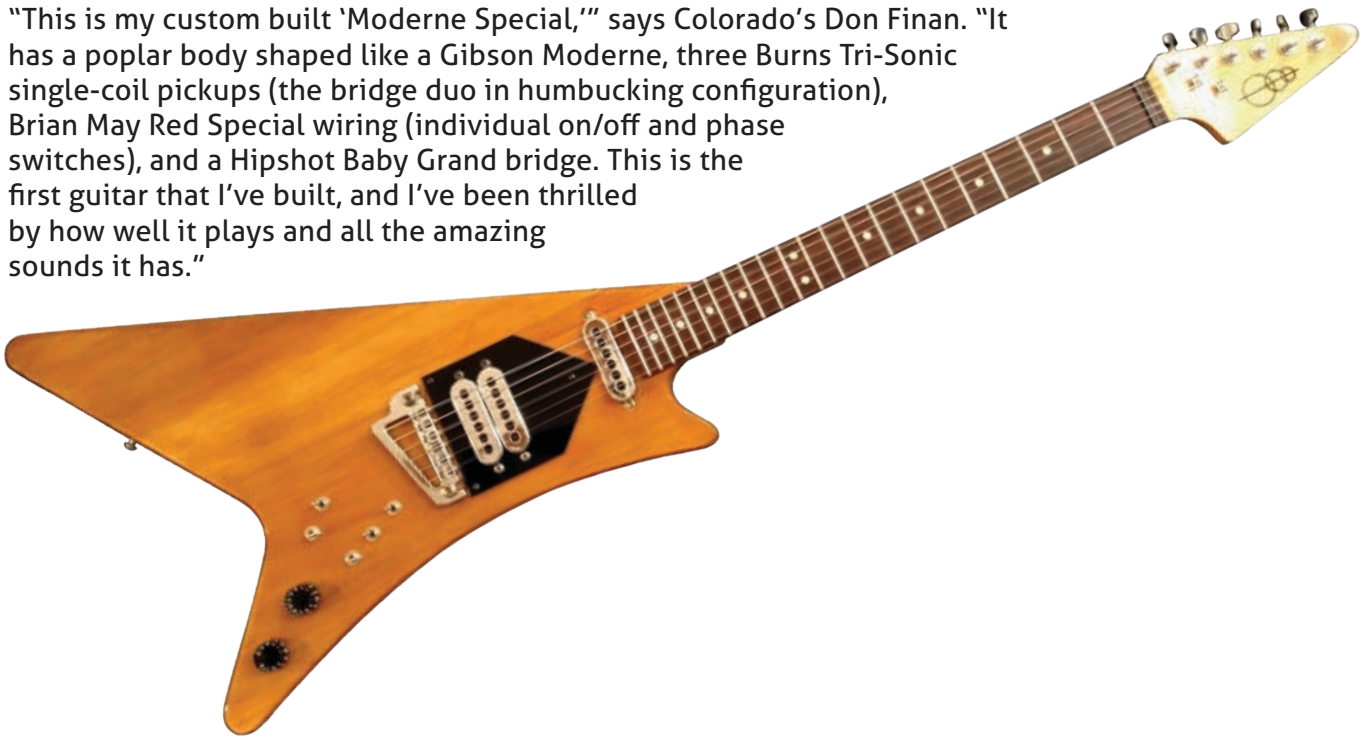
DON FINAN

"This is my custom built 'Moderne Special,'" says Colorado's Don Finan. "It has a poplar body shaped like a Gibson Moderne, three Burns Tri-Sonic single-coil pickups (the bridge duo in humbucking configuration), Brian May Red Special wiring (individual on/off and phase switches), and a Hipshot Baby Grand bridge. This is the first guitar that I've built, and I've been thrilled by how well it plays and all the amazing sounds it has."



GUITAR PARTS MANUFACTURERS & DEALERS INDEX

Have your fellow PG *readers' hot rods whetted your appetite for modding? Below are just some of the many parts builders and dealers who can help you make your tweaking visions a reality.*

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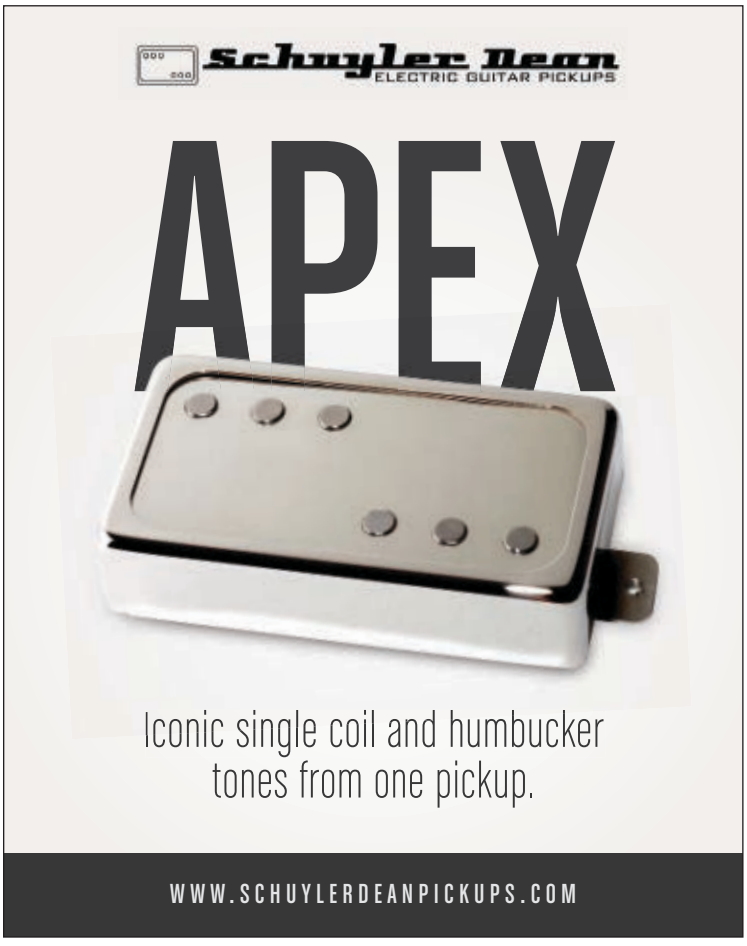

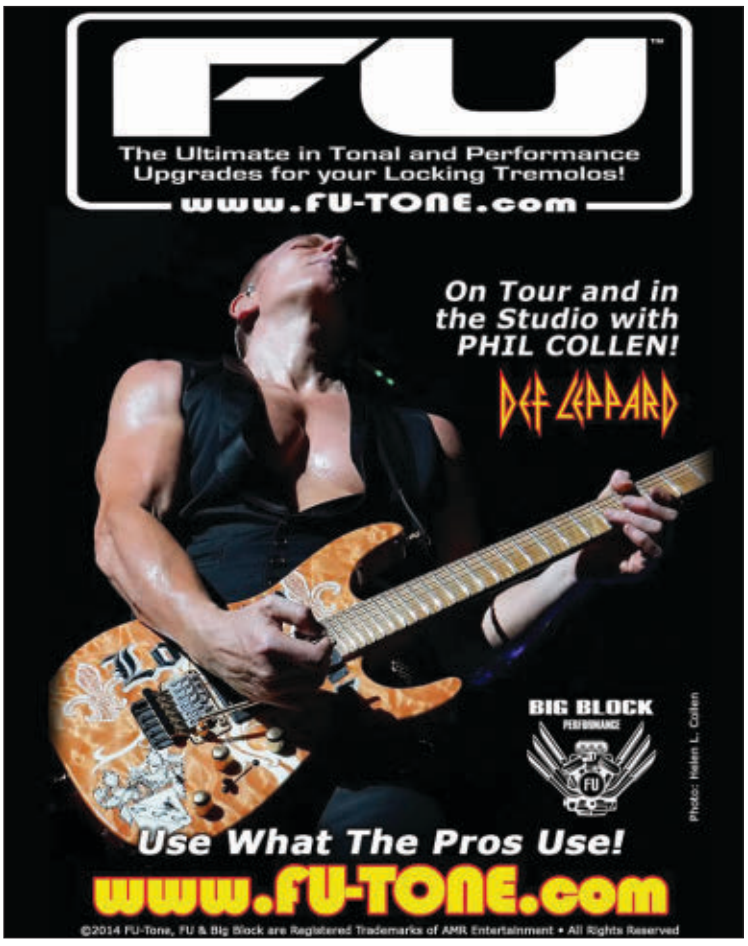

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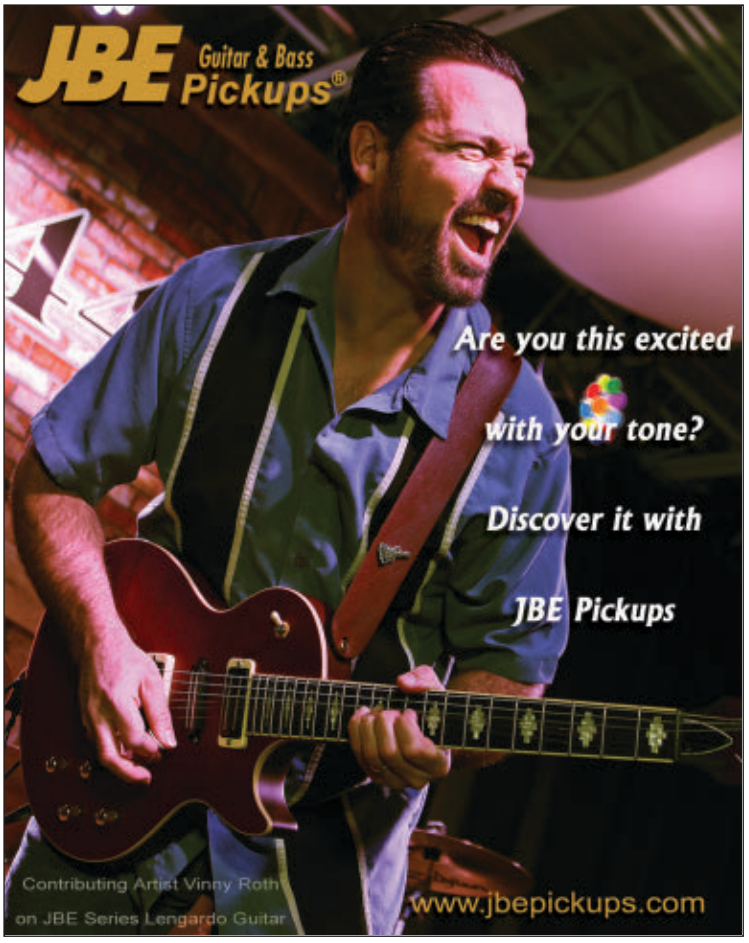
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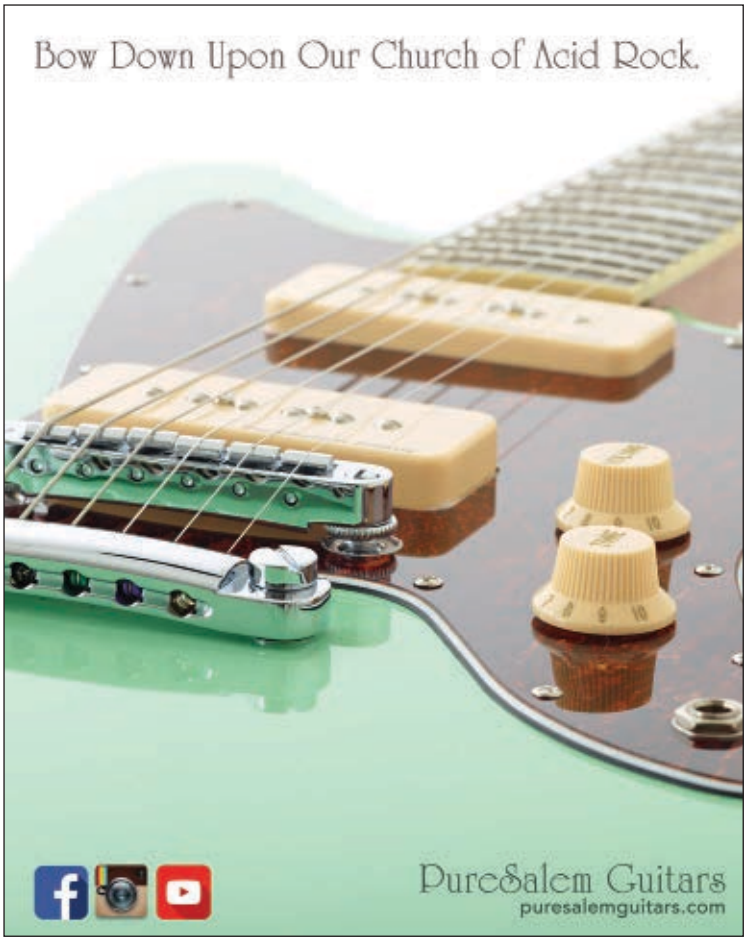
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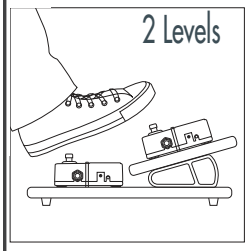

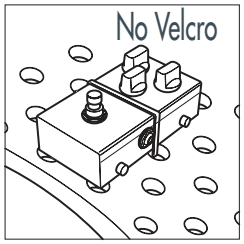

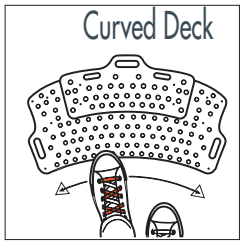

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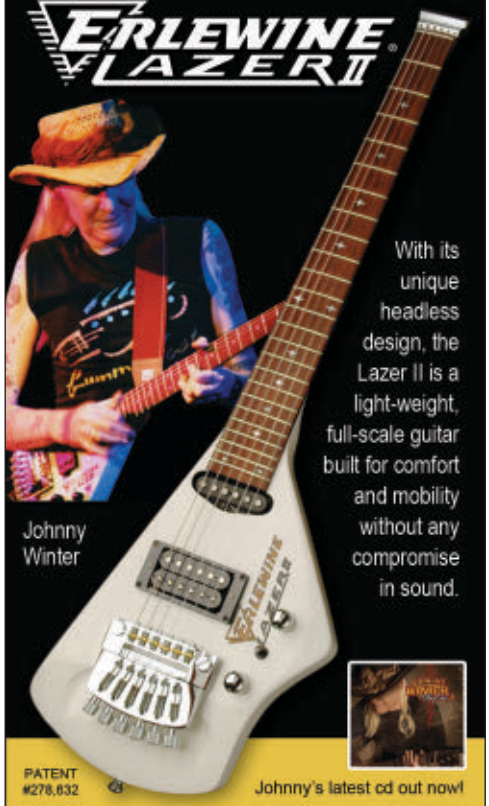

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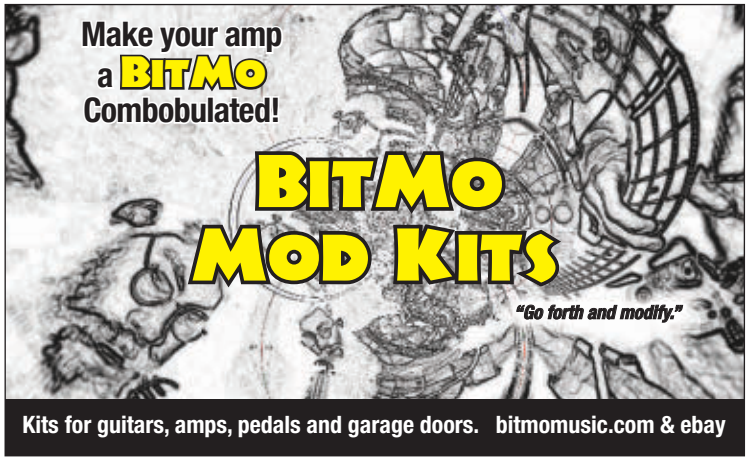
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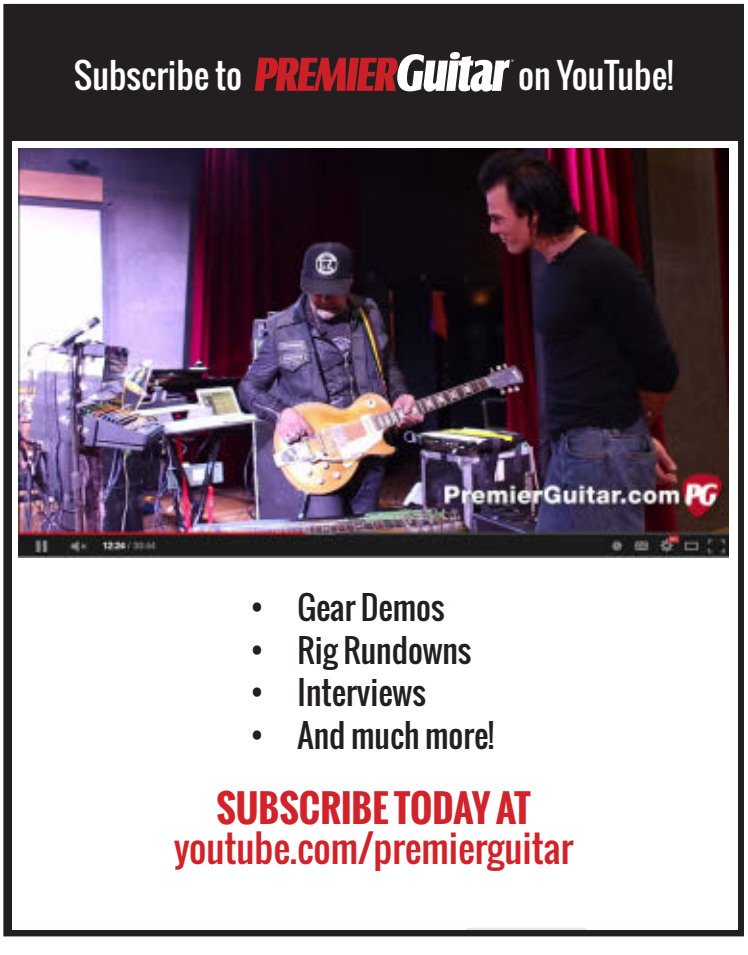
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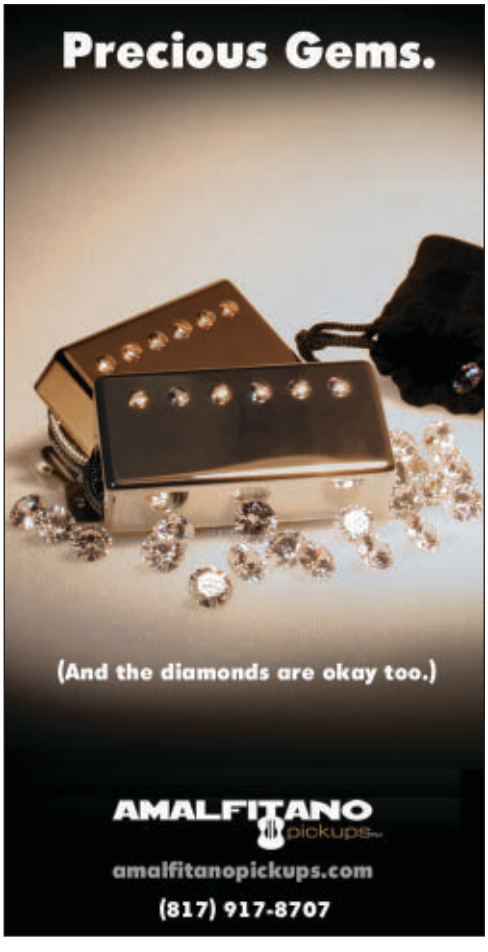
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Hi-Tech from 1878

BY JOL DANTZIG

The plug and phone jack were developed in the 19th century for telephone switchboards.

We guitarists spend an inordinate amount of time and money chasing the sexiest new effects and guitar add-ons. It's no wonder something as mundane as the lowly output jack might go largely unnoticed by innovators. Most of us only think about that little part of the instrument when we can't easily find it. Have you ever wished it were different? Did the jack and plug start out exactly as they are seen today? Is there a better system waiting in the wings to be discovered? Over the short history of the electric guitar, the actual output system hasn't changed much, but its location is still part of the designer's thought process.

It's not surprising that some of the very first electrics—like the 1930s-era Audiovox lap steel—featured a fixed cord like a toaster or other appliances of the day. The cloth-covered wire emerged from the side of the instrument and terminated with a "phone" plug—the 1/4" device we have come to expect. That plug and its phone-jack mate were developed in the late 19th century for telephone switchboards. By the 1930s, the jack and plug had been adapted for other burgeoning technologies like radio and "public address" (PA) sound systems.

Lloyd Loar's Vivi Tone company made some of the most famous early amplified guitars, and they used a pair of small pin-jacks on the back of the body, or sometimes on the bridge itself. The two output wires then merged into a single cord that terminated at the amp end with a single phone plug. Other primeval electrics employed a connector known as a "screw-on" that used a 5/8"-27 thread, which could be used with a likewise outfitted cord. This configuration is often seen on lap steels and microphones of old, giving rise to its nickname "vintage microphone connector."

As the phone jack became the standard, instrument designers looked for the most useful and efficient place to locate them. The jacks were originally designed and manufactured for mounting on thin sheet-metal panels, so that limited where they could be placed on a wooden guitar—especially solidbodies. It's interesting to examine the clever cost-saving design choices that appear on different guitars. The early jazz-box guitars had thin sides that allowed the jack to be mounted through a simple 3/8" hole, and this is what you'd see on a Gibson ES-175, for example. The ES-335, however, has a thin maple-plywood top that provides a fairly robust mounting point right on the front of the guitar. This allows the jack hole to be drilled at the same time as all the other controls on the face of the guitar, thereby saving time in the process.

Solidbody guitars provide a different challenge for the instrument builder because without a "naturally" occurring thin area, one must be configured. The obvious choice would be to use the same cavity as the controls, which share the same limited options for mounting as the jack. This is seen on the Gibson SG. If a design requires a secondary rout for the jack—either on the face or the side of the guitar—a channel for the wires needs to be planned too. If the jack rout is close enough to the control cavity, it may be a simple matter of allowing it to breach the control rout internally and eliminate a wire-hole drilling operation.

In the case of a side rout or hole, most designs call for a mounting plate of some kind. This can be a thin piece of plastic or metal attached by wood screws (like a Les Paul) or a round insert (like a Telecaster). Fender—well known for its manufacturing-friendly designs—began with the Esquire/Tele, which required a separate rout and plate for the jack. The pickups, pickguard, controls, and output were all independent items.

Mounting to a pickguard is an excellent choice that reduces cost and allows the entire electronics package to be sub-assembled offline, and then mated to the finished guitar in almost a single operation. In 1954, the Stratocaster placed the controls and pickups on a single-mounting plate (the pickguard), yet the output jack was still a separate entity. By 1957, however, the redesigned Precision bass had solved this complexity by mounting the output directly on the pickguard. Unfortunately, the P-bass pickups were screwed to the body, so it was a labor trade-off, I guess.

Also of note is the use of more than one output jack on a single instrument. My 1991 DuoTone design used a pair of 1/4" jacks—one for a magnetic and one for a discrete-piezo output. The Rickenbacker Rick-O-Sound is a 2-channel arrangement using a separate 1/4" stereo jack. Inserting a "Y" cord with true stereo into the Rick-O-Sound output sends the neck and bridge pickups to separate mono output plugs at the cord's opposite end. The "standard" jack on a Ric is exactly like any other instrument, and both it and the stereo output are mounted to a metal plate at the body's edge.

Over the decades since the electric guitar arrived, there have been a number of attempts to add flexibility with multiple outputs, and even a few guitars with USB and other computer connections like the iGuitar with its 13-pin connector. Still, guitar builders cling to the tried-and-true 1/4" audio connector from 1878. For reliability and strength, it's hard to beat.

So will future technology eventually force the century-plus-old phone jack aside? Your guess is as good as mine, but I'm not betting any cash on it.

JOL DANTZIG *is a noted designer, builder, and player who co-founded Hamer Guitars, one of the first boutique guitar brands, in 1973. Today, as the director of Dantzig Guitar Design, he continues to help define the art of custom guitar. To learn more, visit guitardesigner.com.*

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Lost Knowledge

BY JOHN BOHLINGER

Tonewheels and flatwounds: Wes Montgomery and Jimmy Smith remind us how sparks can fly when two giants sit down and simply play together.

While I was visiting the Pantheon in Rome, I learned from Rick Steves' Italy guidebook that today nobody knows exactly how the structure was built. Roughly 2,000 years after it was constructed, the Pantheon remains the world's largest unreinforced concrete dome and a mystery of engineering. There are plenty of modern theories, but the Pantheon—like the Pyramids of Giza, Teotihuacan in Mexico, Puma Punku in Bolivia, the Hypogeum of Hal-Saflieni in Malta—demonstrates sophisticated thinking that was lost, suggesting that at one time there were a lot of really smart people accomplishing amazing things and then there weren't.

How does that happen? How do humans grow more stupid and yet still survive? The fact is that even during our so-called Information Age, we are losing knowledge.

Por ejemplo: Public schools are doing away with teaching cursive writing. Losing that ability may not seem like a big deal as most of us rarely use it anymore. Few will miss the ability to write in cursive, but future generations will miss the ability to read the correspondence from all the preceding generations that wrote in cursive ... like parents or grandparents, or our founding fathers with the Declaration of Independence, or other folks who penned stuff that may be important. That's one way knowledge disappears, but there are subtler and more insidious ways our society declines yearly.

Even during our so-called Information Age, we are losing knowledge.

Because a good deal of modern communication happens (ineffectively) through talk-to-text, I've totally lost my ability to spell. Nor can I write freehand or type well with my gigantic, gorilla-like thumbs. My dependence on GPS has stripped me of the ability to read a map. I read music charts so often that I've forgotten how to remember songs. I read number and chord charts so often I've forgotten how to read staff notation. I always tune with a tuner, so I can't for the life of me tune by ear. I can't remember how to play a decent solo without employing a pedal or two ... delay, dirt, compressor, phaser—give me something! I wonder, how far can I deteriorate and still slough by?

That's just my personal decline—no big deal—but here's scary big-picture stuff: Entire techniques of playing music are on the brink of extinction. I spent last year on tour with Dave Ristrim, my longtime buddy/pedal-steel sensei. Dave can completely nail this Buddy Cage, palm-blocking style of steel guitar you rarely hear any more. Pedal steel is already an oddball niche instrument, but this particular technique is so widely difficult to perform and there are so few recordings of it done right, there's a very real possibility this amazing style of playing could disappear.

Similarly, the Hammond B-3 organ went out of production in 1975. Every year modern companies design and build new keyboards to cop that sound, and they're very close, but it's not the same thing. B-3s and Leslies are for purists who won't accept anything else, but people who are able to keep these beasts running are dying, which means fewer players will have access to them. Perhaps someday no one will be able to repair or play one, and if that happens, future generations will never enjoy the drug-like euphoria one feels while standing in the presence of a spinning, tube-driven Leslie powering a real B-3 in full flight. If you've never had this experience, seek it out while you can.

As technological advances contribute to our amazing gear options, old-school, non-gear-driven ability becomes almost obsolete. Ever jam with a top-shelf, over-70 professional guitarist? A pro from that era can pick up a guitar, tune it by ear,

and then kick your ass with strong hands, perfect meter, and a natural penchant for melody. No pedals required.

This week I watched ideological extremists destroy 3,000-year-old statues in a museum in Mosul, Iraq, shortly after they burned thousands of books at the Mosul Public Library. Some people see all of this as an inauspicious sign of the future, like we could be headed toward a dark, Idiocracy hellscape. Not me, because I know life is driven by evolution and evolution ultimately leads to love, art, and beauty. Why? Because the best way to ensure survival of our species is to take care of each other and make the world a better place. So dig into the past, listen to Django, Wes Montgomery, Jimmy Smith, Buddy Cage, Earl Scruggs, Les Paul, Jimmy Bryant, Speedy West, Chet Atkins, Joe Maphis, Hank Garland, and Phil Baugh (search for "Phil Baugh - Country Guitar" on YouTube). If you don't, some of these treasures may disappear like the Library of Alexandria.

JOHN BOHLINGER *is a Nashville musician who has led the band on NBC's* Nashville Star *and served as musical director of the* CMT Music Awards *for the last six years. In addition to his "Last Call" column, John recently joined* PG *as our full-time gear demo/Rig Rundown video dude.*

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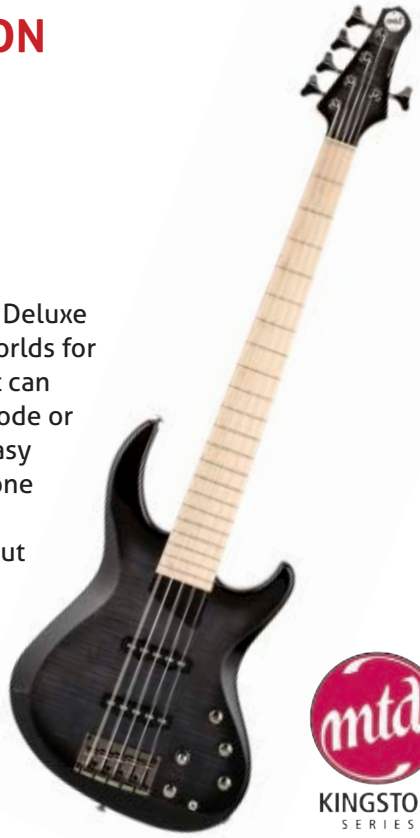

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